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## Flexibility of Output Assured In Scullin Mills

New Type of Adjustable Speed Drive for Merchant Mill and Combination Structural and Blooming Mill Aids to Diversity in Production

—BY GILBERT L. LACHER—

**E**CONOMICAL production in any plant implies a maximum use of manufacturing facilities and hence a minimum overhead. Intermittent periods of idleness are expensive because fixed costs continue to accrue whether a works be inactive or running. It is for this reason that plant managers try to balance their business and diversify their products in such a manner as to insure continuous operation. Efforts in this direction have been hampered, in the case of manufacturers serving the railroads, by irregularity of buying. It has been feast or famine. Either the carriers are vying with each other in their efforts to secure new equipment, or they are all in the market for practically nothing.

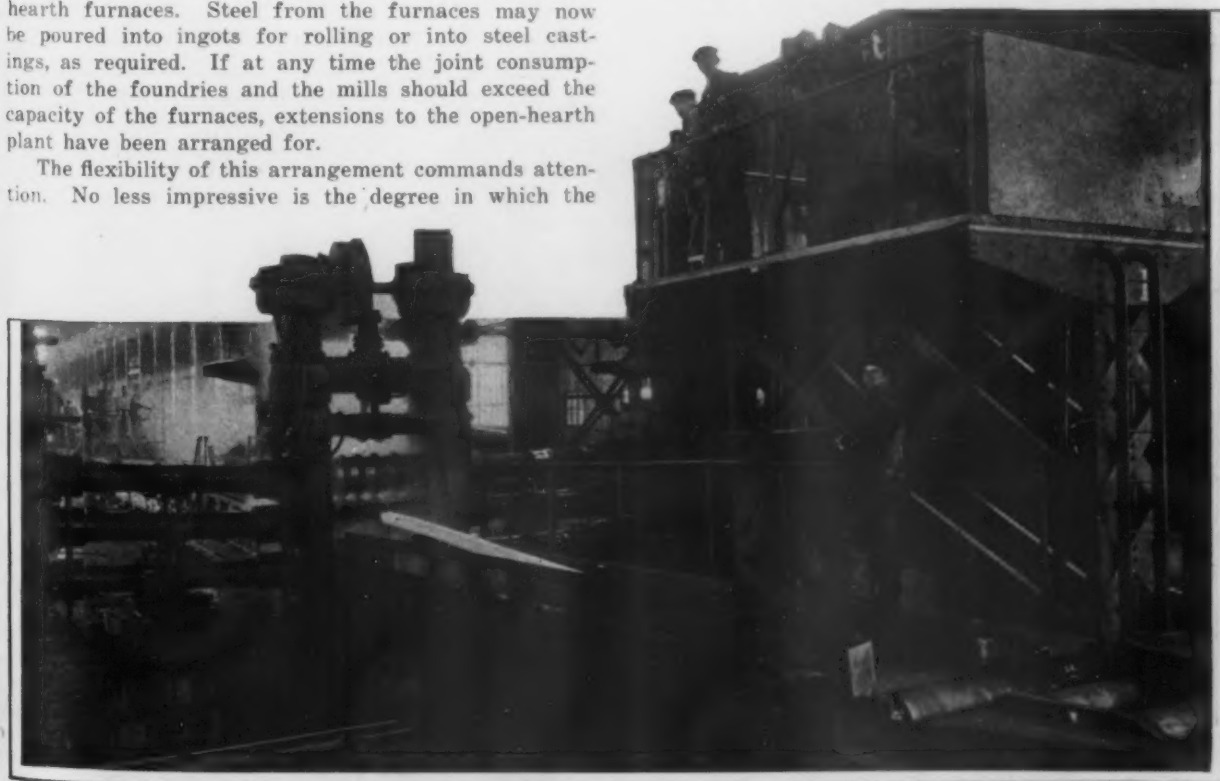
It is not surprising, therefore, that one of the largest producers of steel castings for railroad rolling stock should expand the scope of its business to include products for which there are other markets. The mills completed and put into operation by the Scullin Steel Co., St. Louis, late in the fall of 1920, supplement the foundries which previously were the sole outlet for the steel produced in the company's open-hearth furnaces. Steel from the furnaces may now be poured into ingots for rolling or into steel castings, as required. If at any time the joint consumption of the foundries and the mills should exceed the capacity of the furnaces, extensions to the open-hearth plant have been arranged for.

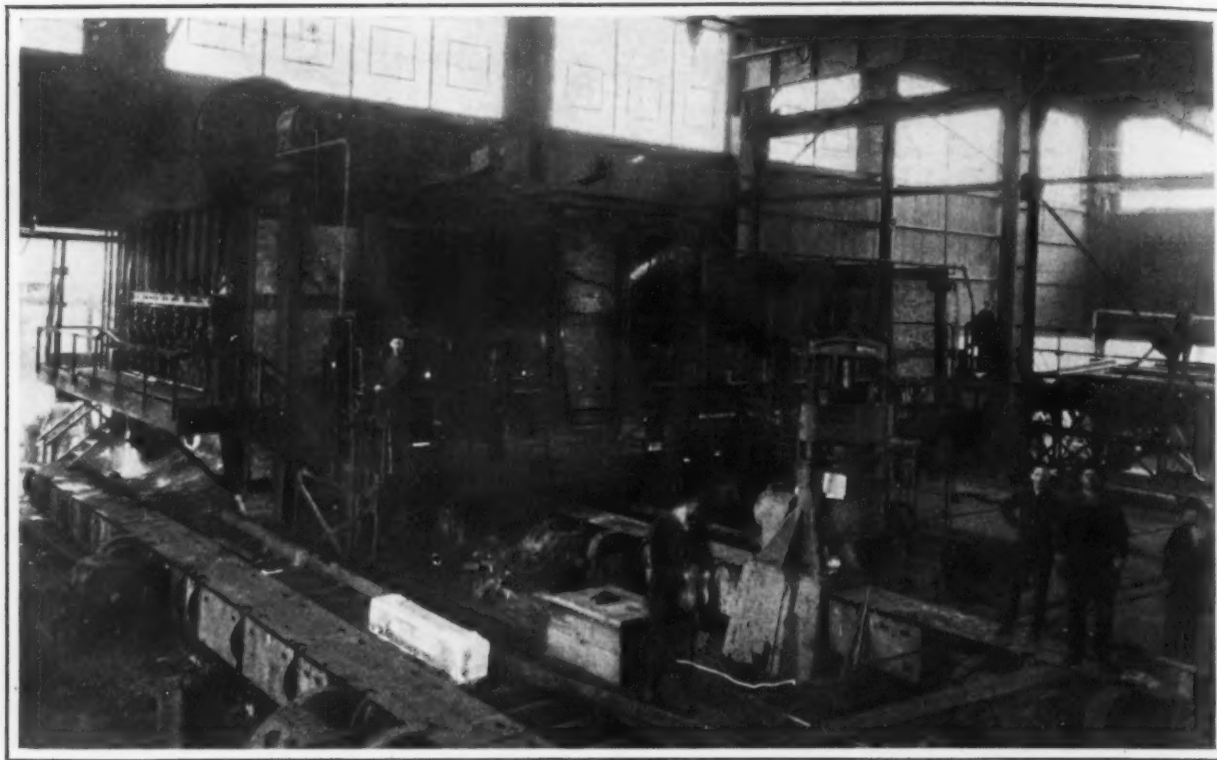
The flexibility of this arrangement commands attention. No less impressive is the degree in which the

new mills are equipped for a diversity of products and a maximum use of rolling capacity. The smaller of the company's two mill buildings contains a 16-in. roughing mill and a five-stand 12-in. finishing mill. The latter is operated by an adjustable speed motor set which permits of the rolling of light sections of merchant bars at a higher rate of speed, thereby insuring a tonnage production which will compare favorably with the output of the heavier sections for a like period. The adjustable speed drive, operating on alternating current, differs from previous types in that it has a speed range extending from below and through synchronism to a point above, and the torque varies inversely with the speed. To increase further the adaptability of the merchant department, the company proposes to add a 16-in. finishing stand in which material may be finished direct from the 16-in. roughing stand.

The 22-in. mill is equally interesting from the

When the Roughing Stand of the 22-in. Mill Is Uncoupled from the Other Stands, It May Be Used as a Billet Mill. There is a floating middle roll, operated hydraulically





An Ingot Passing from the Delivery End of the Reheating Furnace. The ingot turner, just behind the ingot, is located in the roller table. At right is an up-cut hydraulic shear.

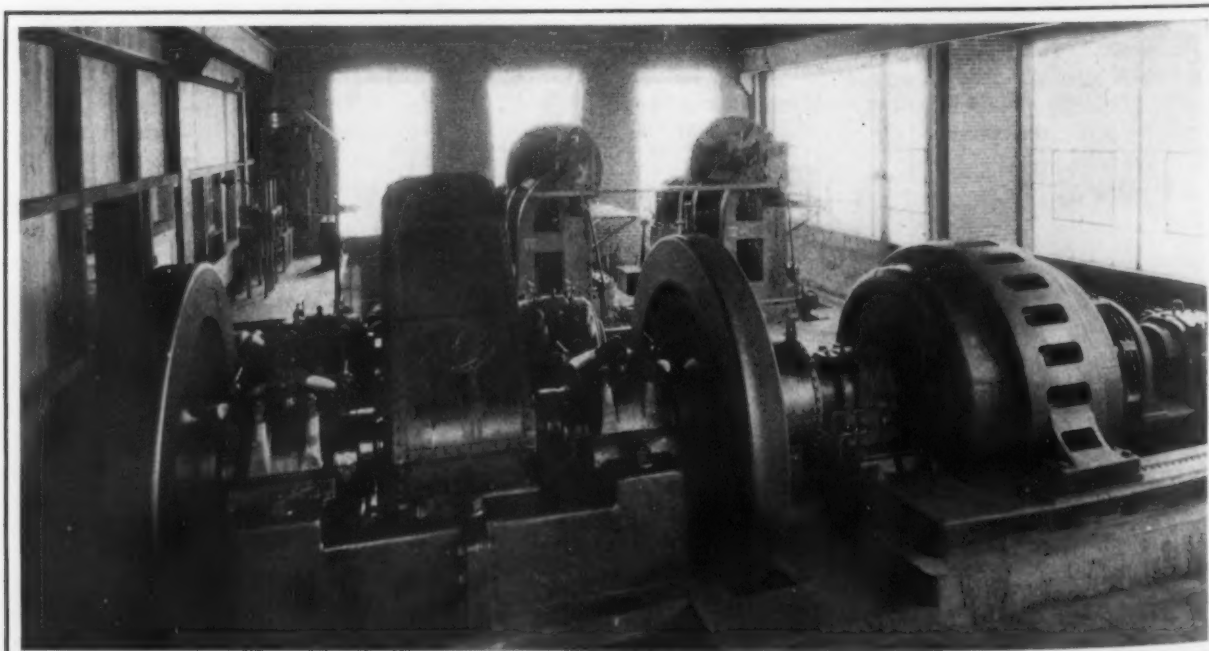
standpoint of flexibility of output, as it may be employed either for the production of finished shapes or billets. The first of the four three-high stands is equipped with a floating middle roll so that it may be used as a separate billet mill when desired.

Throughout the plant are evidences of close attention to details which make for economical production. The layout with reference to the receipt of materials and the shipment of finished products is such as to eliminate unnecessary handling. In the roll shop, equipment has been provided to insure a maximum output of work per man. The water circulation system is noteworthy because of the utilization as a cooling tank of the valley in the roof of the bay connecting the mill buildings. The electric sub-station is a model of up-to-date construction, complete equipment and proper insulation of apparatus. For the convenience and protection of the mill hands the company has pro-

vided a "first aid" room and the best of toilet, wash-room and locker facilities.

An unusual feature of the 22-in. mill of the Scullin plant lies in the fact that it may be used either for the rolling of billets or finished material. It consists of four three-high stands served by two pairs of traveling tilting tables. The roughing stand, which contains an hydraulically-operated floating middle roll, such as is used in three-high plate mills, may be uncoupled from the other stands in 15 min. time and, operating separately as a billet mill, roll billets for use in the 12-in. mill. The stand may be used as a bloomer when rolls are being changed in the other stands, or at any other time when the finishing end of the mill is idle. All four stands, together with the electrically operated tilting tables, were built by the United Engineering & Foundry Co., Pittsburgh.

The mill is operated by an 1800-hp. Westinghouse



Connected with the 22-In. Mill by Flexible Coupling and Herringbone Gears, the 1800-Hp. Three-Phase Induction Motor, of Heavy Steel Mill Type, Maintains Constant Speed

constant speed induction motor of heavy steel mill type, taking three-phase 25-cycle current at 2200 volts. The motor, which is connected with the mill through a flexible coupling and herringbone gear unit, operates at 566 r.p.m. By gear reduction the mill speed is brought down to 68.6 r.p.m., corresponding with a rolling speed of 395 ft. per min. The pinion shaft is mounted with two fly-wheels, nine feet in diameter and weighing 27,000 lb. each, one being overhung on either end of the shaft.

The mill rolls billets, channels, angles, beams, squares, rounds, flats, or light rails direct from 12 x 12-in. 2350-lb. ingots. These are poured from 12. oil-fired 35-ton open-hearth furnaces, located in the foundry unit of the Scullin works, two-thirds of a mile away. The combined capacity of the furnaces is 15,000 to 18,000 tons per month, as compared with a rolling capacity in the mills of 10,000 tons.

From the open-hearth plant the ingots are conveyed by company rails into an open bay between the two

in the process of rolling to run under the furnace and beyond the end of the building. Ingots are charged into the furnace practically cold. When the mill is operating, as many as 25 ingots an hour, or about 25 gross tons, are reheated.

From the reheating furnace, the ingots are delivered to a roller table which carries them to an ingot manipulator, where every other ingot is turned so that all are fed to the roughing stand with the small end first. When billets are rolled on the first stand, they are delivered directly by roller table to an hydraulically-operated up-cut shear equipped with a motor-driven gage for cutting lengths desired; thence they are transferred by an hydraulic kickoff down a skid chute to a billet conveyor which deposits them in a cradle located in the open bay between the two mill buildings. The cradle is lifted by an overhead traveling crane and its contents are dumped in a section of the bay used for billet storage.

On either side of the 22-in. mill is a pair of travel-



Billets Rolled on the First Stand of the 22-In. Mill Are Delivered Directly to an Up-cut Hydraulic Shear with Motor-Driven Gage for Cutting Lengths Desired

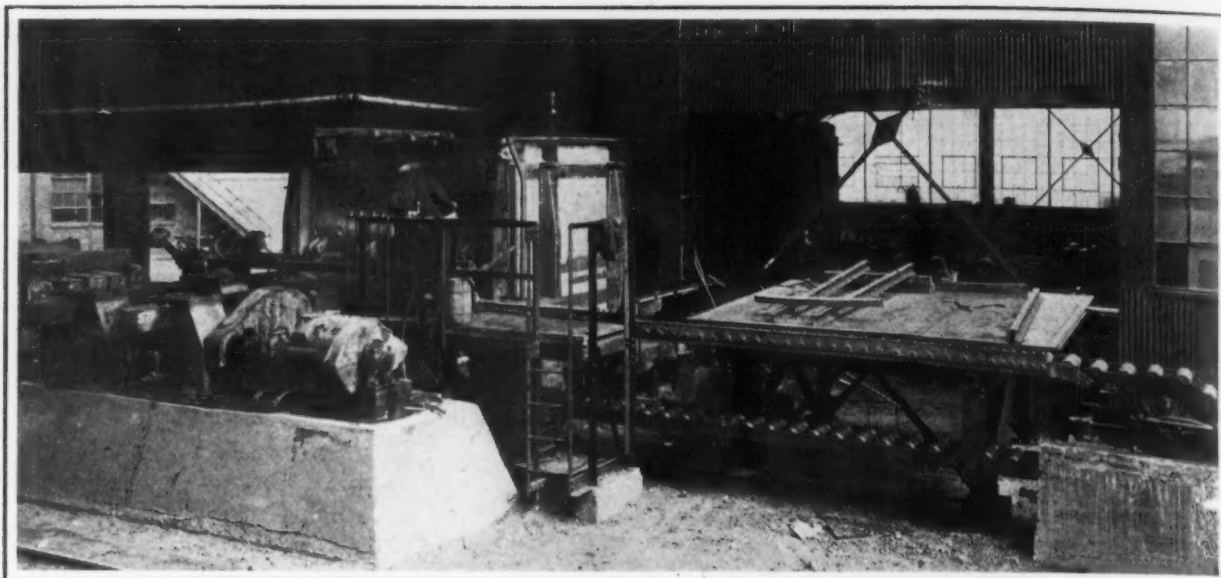
mill buildings. Here they are transferred by overhead traveling cranes to a charging table, from which they are skidded one at a time onto a roller table, operated by a 20-hp. Westinghouse motor. The rollers deliver the ingot to position at the end of a flat arch, water-cooled, continuous, oil-fired reheating furnace. A ram, operated by rack and pinion from a 20-hp. Westinghouse motor, charges the ingot into the furnace, and by so doing pushes another out at the delivery end. The ingots are charged in a double row and are pushed through the furnace on water-cooled skid pipes. The length of the furnace hearth is 46 ft. 3 in. and the width is 15 ft. Heat is supplied by eight oil burners.

All furnace patterns and castings were made in the Scullin foundry and construction work was handled entirely by the company's own force. A feature of the furnace construction is the fact that its bottom has been elevated above the level of the pull-over table on the down side of the mill, thus permitting long pieces

ing electrically-operated tilting tables, each equipped with three Westinghouse motors of 30, 60 and 80 hp. respectively. Opposite the second stand on the furnace side of the mill is a roller table equipped with an hydraulically-operated up-cut shear. Pull-overs, one on each side of the mill, carry the finished material to a delivery roller table, whence they are conveyed to a motor-driven hot saw and then to a hot bed. All channels, angles and beams are passed through a series of four two-high straightening rolls after leaving the hot bed. The straightener, which rests on shoes and is pulled into or out of alinement with the roller table at the end of the hot bed by means of a cable operated by overhead traveling crane, was constructed by the United Engineering & Foundry Co. It is equipped to take channels and beams, 4 to 8 in. wide, and angles up to 6 in.

After finished material is straightened, it passes to transfer tables and thence to one of two motor-driven





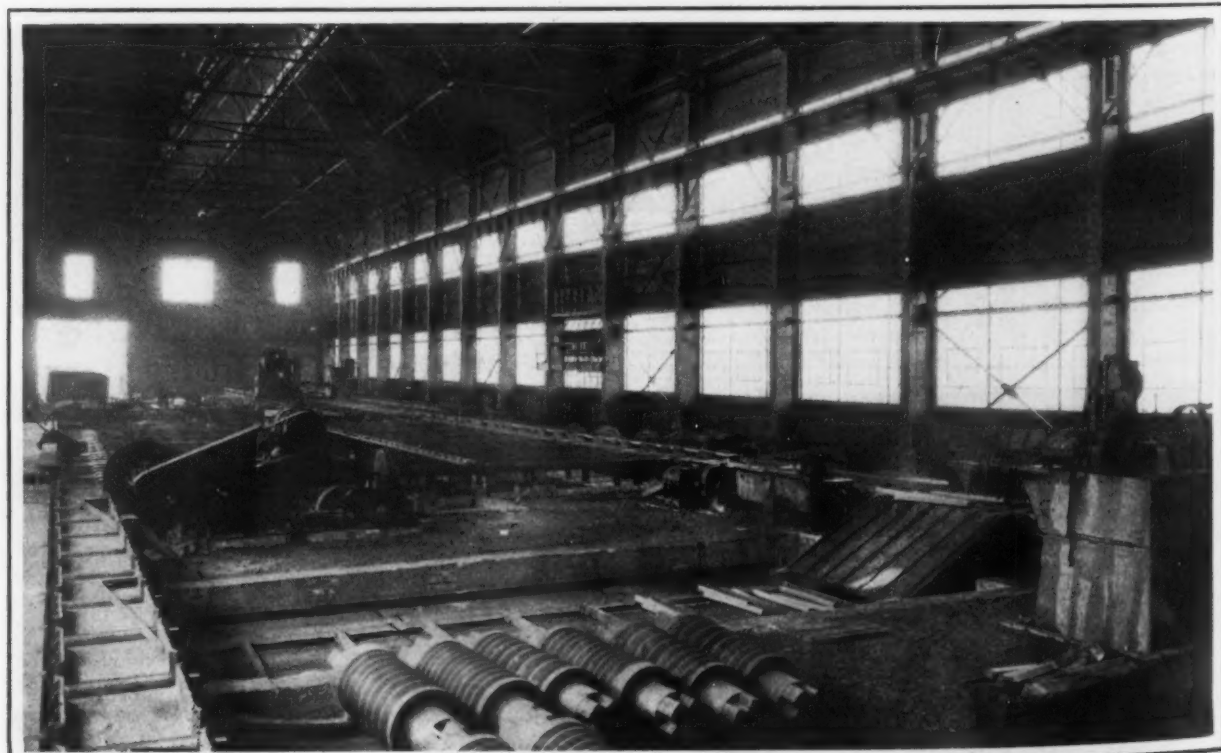
Billets to Be Charged into the Reheating Furnace Serving the 12-In. Merchant Mill Are Carried by a Chain Roller-Type Conveyor to the Receiving End, Where Pushers Operated by Rack and Pinion from a 30-Hp. Motor Charge Them

vertical United Engineering shears, by which it is cut to length. It is then dropped by motor-driven kickoffs to cradles and inspected. All bars are straightened in gag presses or roller straighteners if required. After inspection the product is transferred by overhead crane to a Fairbanks 20-ton scale, and is made ready for shipment. Inside the building and adjacent to the scale, is a shipping track with a capacity of five cars, facilitating the loading of material direct to freight cars.

Space in the open bay between the 22-in. mill building and the merchant mill is utilized for roll and billet storage. The billets—ordinarily 3 x 3 in. or 4 x 4 in.—after weighing on a Fairbanks 5-ton scale, are conveyed by overhead traveling crane to a chain roller-type belt conveyor operated by a 20-hp. Westinghouse motor, which carries them to the receiving end of the continuous reheating furnace serving the 12-in. merchant mill. By adjusting stops on the conveyor the billets are brought to position at desired points opposite the end of the furnace, so that three rows, two rows or one row of billets may be run through the

furnace, as the billet length may dictate. Pushers operated by rack and pinion from a 30-hp. Westinghouse motor charge the billets into the furnace, at the same time forcing out billets at the delivery end. The reheating furnace, heated by four oil burners, is similar in design to the furnace serving the 22-in. mill, having a hearth 10 ft. wide and 38 ft. long. The furnace was constructed in its entirety by the Scullin company. A single stack serves both of the reheating furnaces.

The merchant mill building contains a three-high 16-in. roughing mill and a 12-in. merchant mill consisting of one two-high and four three-high stands. Later the 16-in. roughing mill will be supplemented with a finishing stand. The 16-in. mill is driven through a gear set by a 600-hp. Westinghouse constant speed induction motor of heavy steel mill type, taking three-phase 25-cycle current at 2200 volts. The motor speed of 487 r.p.m. is reduced by gears to a mill speed of 87.4 r.p.m., the rolling speed being 366 ft. per min. The motor is connected with the mill by a flexible



After Shearing, Billets Are Kicked Off Down the Skid Chute at Right to Billet Conveyor Which Carries Them to Cradle in Open Bay Between the Buildings. Hot bed is beyond conveyor; delivery roller table and hot saw at left





Rolling on the Three-High 16-In. Roughing Mill. At right is the electric shear preceding the pony roughing stand of the 12-in. mill. Flywheel and gear casing are at left, beyond foot-bridge

coupling and herringbone gear unit with two fly wheels on the pinion shaft,  $6\frac{1}{2}$  ft. in diameter and weighing 9000 lb. each. From the 16-in. rougher, material passes through an electrically operated shear and to the pony roughing stand of the 12-in. mill.

#### A New Type of Adjustable Speed Drive

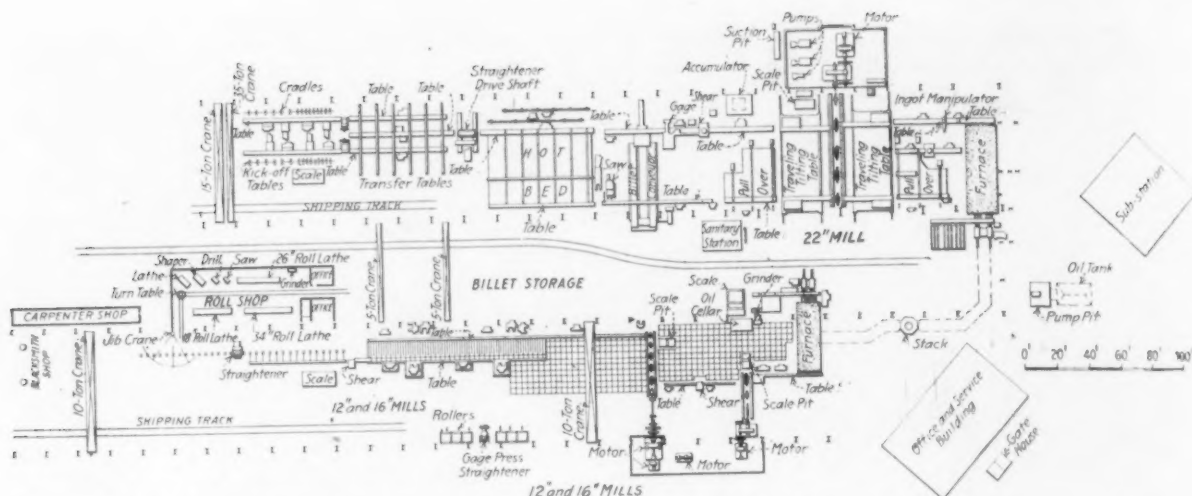
The drive of the 12-in. mill is the first of its kind to be installed. Heretofore adjustable speed a.c. motor sets have been either of the Scherbius or Kraemer type. Both have certain disadvantages which, it is believed, have been successfully overcome in the new Westinghouse set at the Scullin plant. The principal criticism of the Scherbius type set is that the torque is constant at all speeds, although heavier material rolled at slower speed calls for a greater torque than light material rolled at higher speed. The Kraemer set is of two types, one of which operates at constant torque and the other at constant horse power. With the latter type, the objection to the Scherbius type set is overcome, but the Kraemer type sets present certain difficulties in speed adjustment. There are really two

separate speed ranges, one above and the other below synchronism, but the transition from one to the other cannot be made under load. The motor may also be operated as a constant speed machine practically at synchronism, but to change from that speed to either of the upper or lower speed ranges, the motor must be stopped.

The new Westinghouse installation at the Scullin plant was designed to permit the adjustment of speed, without interruption and without removal of load, throughout a range extending from below and through synchronism to a point above. At the same time, the torque varies inversely with the speed. The set includes an 800-hp., 2200-volt, three-phase, 25-cycle heavy steel mill type induction motor, a synchronous motor on the same shaft, and a frequency changing unit. The induction motor is started with an auto-controller set at close to synchronous speed,  $187\frac{1}{2}$  r.p.m. The synchronous machine operating on the same shaft is just floating on the line, having no current passing through its fields. If the speed of the induction motor is increased up to the maximum, 225 r.p.m., or decreased



Between the Two Mill Buildings Is an Open Bay Used for Roll and Billet Storage. The false roof serving as cooling tank for water is in the valley between mill roof at left and furnace charging building at far end



General Layout of the Rolling Mills. Showing Progressive Travel of Material from the Heating Furnaces at the Right, Through the Mills and to the Shipping Department at the Left. The rolls are shown solid black

to the minimum, 150 r.p.m., a 10-hp. motor connected by shaft with the frequency changer must be started. As the driving mill motor is slackened in speed, its loss in horse power is made up by the synchronous machine operating on the same shaft, so that when the speed is decreased to the minimum, a decrease of 20 per cent, the corresponding loss by the induction motor of 160 hp. is made up by the synchronous motor. On the other hand, when the induction motor is running at a speed above synchronism, the synchronous machine operates as a generator.

The driving mill motor is a standard induction machine with six-phase secondary winding, and the other unit on the same shaft is a standard synchronous machine wound for the same speed and frequency as the main unit. The synchronous machine, as previously indicated, operates as a motor at speeds below synchronism and as a generator at speeds above synchronism. The auxiliary frequency changing unit comprises a small synchronous motor connected to the frequency changer, which is a special apparatus similar in appearance to a rotary converter. The a.c. end of the changer is connected with the stator of the synchronous motor on the main motor shaft, while the other end is connected with the slip rings of the induction motor. Speed adjustment is obtained by introducing a counter voltage in the winding of the rotor of the main motor through the changer. When operating below synchronism the slip energy of the main motor passes through the frequency changer into the synchronous motor.

When operating above synchronism, the synchronous machine is driven as a generator and transmits energy through the changer to the rotor of the induction motor. Speed adjustment is obtained by moving a field rheostat controlling the field of the rotor of the synchronous machine. The driving mill motor is connected direct to the mill through a flexible coupling and a 9-ft., 19,500-lb. fly wheel, mounted on its own bearings. The motor speed range of 150 to 225 r.p.m. is accompanied by a rolling speed range of 470 to 700 ft. per min.

Complete control of the 12-in. mill drive is concentrated at one point. A magnetic controller is operated by a master switch which has been mounted where it is most convenient for the operator. The speed adjusting rheostat is mounted near the master switch. The 16-in. mill and the 22-in. mill motors also have magnetic controllers operated by master switches arranged for floor mounting.

The flexibility of the 12-in. mill from a production standpoint has been materially enhanced because of the wide speed range at constant horse power. Small sections may be rolled at greater speed than heavier material, and thus the tonnage output of the mill main-

tained. Records thus far achieved on the mill have been highly satisfactory. On one day in December the output was 110 tons in ten hours, and for several hours during that period, over 12 tons an hour. On another day 957 billets passed through the mill in 540 min., an average of nearly two a minute. The highest hourly rate was 167 billets and the total output for the period was 70 tons.

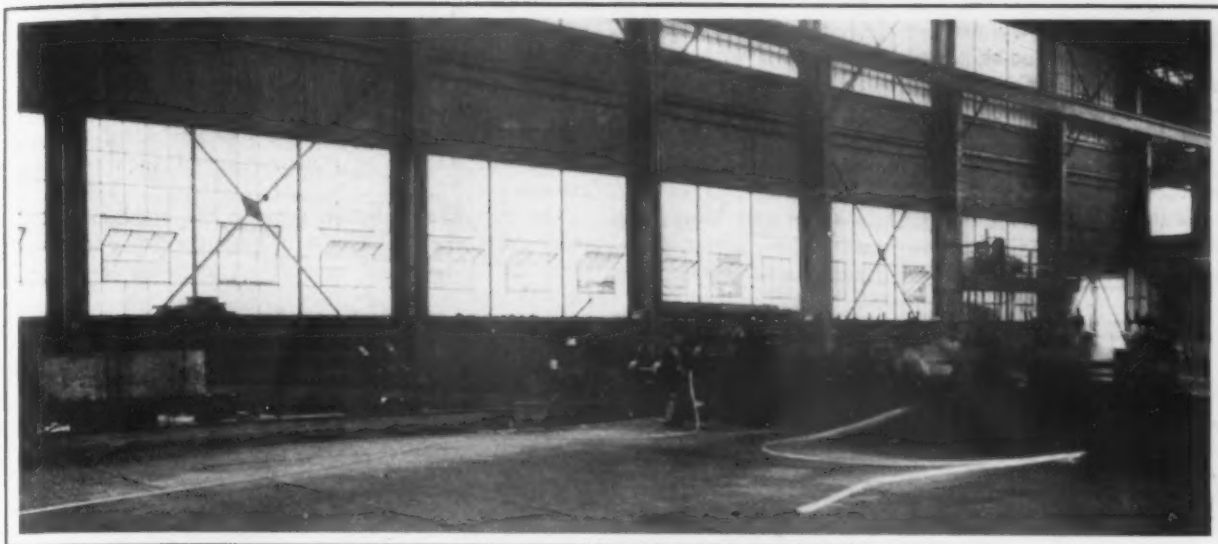
From the finishing stand of the 12-in. mill, material is passed by roller table to a flat hot bed, which was constructed by the United Engineering & Foundry Co. Shuffle bar and ratchet movements progress the product across the bed to roller table, by which it is carried to a United Engineering vertical motor-driven shear and cut to length. Straightening rolls have been provided for straightening small angles and channels and other irregular shapes, while a gag press is used for straightening rounds, flats, squares, hexagons, etc.



This Adjustable Speed Drive Is the First of Its Kind to Be Installed. At right is the rheostat and at left the frequency changing unit

Material is weighed on a 20-ton Fairbanks scale before being loaded into cars which are switched into the building.

The rolls in the stranding and finishing stands of the 12-in. mill are of cast iron, but the rolls in the roughing stand of the 12-in. mill and in the 16-in. and 22-in. mills are of steel, cast in the Scullin company's own foundry. Although roll making represents a new undertaking for the steel castings department of the plant, excellent results have been obtained with the rolls cast for use in the new mills. The fact that no roll breakage has been encountered with these rolls commands attention, as it is unusual for a mill to start up with a green crew and escape difficulties of that character. From a tonnage standpoint the performance of the rolls has been exceptionally good, when considered in the light that no dressing has proved necessary. To take care of its own future needs, as well as to supply outside demand, the Scullin company



Excellent Light Is Supplied the Catchers of the 12-In. Merchant Mill by Continuous Sash in the Walls, as Well as Monitors in the Roof. There are one two-high and four three-high stands

expects to set aside a part of its foundry for roll making.

For machining rolls a shop has been provided which adjoins the shipping end of the 12-in. mill building and projects into the open bay between the two mill structures. A narrow gage track down the center of the roll shop is connected by turn-table with a track which runs into the merchant mill building. As an auxiliary to the trucks which operate on this track a five-ton Curtis Pneumatic Machinery Co. overhead traveling hand-power crane has been provided. The shop is exceptionally well lighted, both by side sash and overhead monitors. The feature of the shop is the heavy roll lathe equipment, furnished by the United Engineering & Foundry Co., which includes an 18-in., a 26-in. and a 34-in. machine, all with double beds, each being equivalent to two ordinary lathes. At least two rolls may be machined simultaneously on each lathe, and often as many as three and four rolls at a time, depending on the size of the rolls. The roll lathes are operated by Westinghouse motors. Other tools in the shop in-

clude a Lodge & Shipley 18-in. x 10-ft. geared-in-head engine lathe, a Gould & Eberhardt 24-in. shaper, a Baker Brothers heavy duty drill, an Atkins power hack saw and a United States Grinder Co. double tool grinder with  $3\frac{1}{2}$  x 24-in. wheels. All of these latter machine tools are operated by General Electric Co. motors.

#### Valley in Roof Used for Cooling Tank

The water circulation system which cools the rolls in the mills and the furnace skid pipes presents some novel features. Water is drawn by a Dayton-Dowd 2000-gal. per min. pump from a cold well with a centrifugal pump head, located under the ingot feed table platform at the charging end of the 22-in. mill reheating furnace. From the cold well it is driven through a 10-in. main to the mills and furnace skid pipes, whence it drains back to a hot well located near the motor house. From here it is pumped by a second Dayton-Dowd Co. 2000-gal. per min. pump, operated by a 75-hp. General Electric motor, to cooling sprays situated in the valley of the roofs connecting the 22-in.



Largest of the Three Heavy Double-Bed Lathes in the Roll Shop Is the One Shown—a 34-In. Machine. Two or more rolls may be machined simultaneously on each lathe, depending on their size

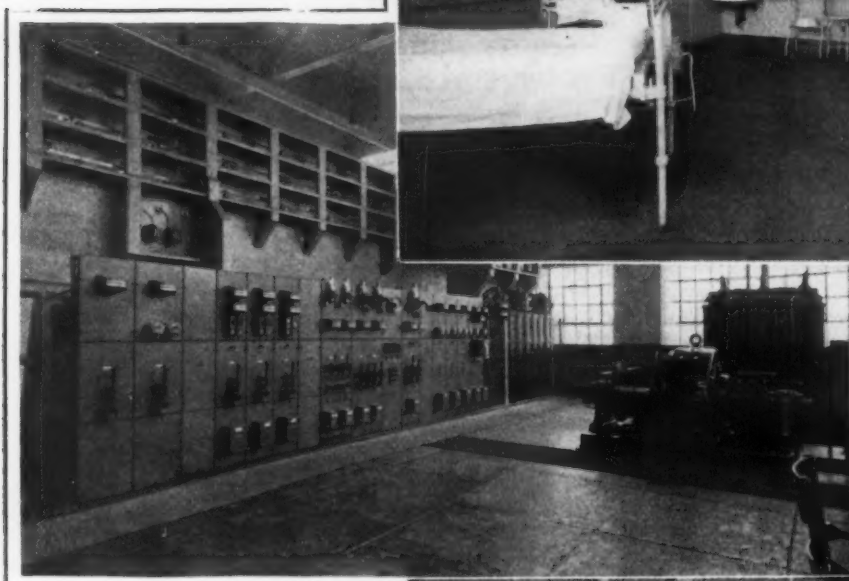


mill building with the furnace charging building. Here a 150-ft., false wood-sheathed roof, covered with "Certainteed" roofing to make it waterproof, serves as a receptacle for the water discharged by the sprays. The utilization of the roof as a cooling tank was decided upon because it serves the purpose just as satisfactorily as a concrete well and was considerably cheaper to construct. The spray header has about ten branches with approximately sixty cooling sprays. From the spray roof the water passes by gravity to the cold well,

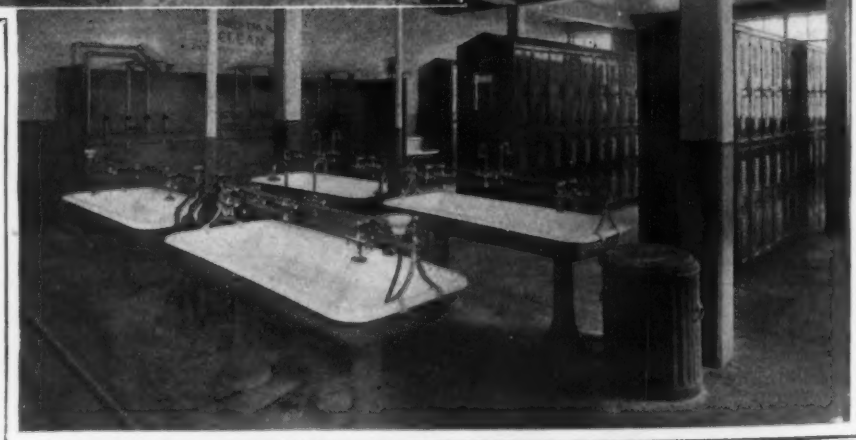
20,000-gal. underground storage tank near the 22-in. mill building. The tank is of concrete treated with various densifiers to make it impervious to oil. Pumping equipment includes two Goulds twinplex pumps, which maintain a pressure of 100 lb. per sq. in. Niagara meters indicate the oil consumption of each reheating furnace.

The power sub-station serving the steel mills is a model from the standpoint of construction and equipment. It is built of reinforced concrete and brick

First Aid Station, with Permanent Attendant, Is Completely Equipped with Operating Table and Other Needed Appliances (Right)



Six Hundred Lockers, Together with Shower Baths, Lavatories and Other Toilet Facilities, Are Provided for the Men (Below)



A Model in Insulation of Equipment, the Sub-station Has a 500-Kw. Rotary Converter for 230 Volts at Right. Back of it is a 550-kva. 3-phase transformer. Behind the six doors at right end of switch-board are the main oil switches for the 13,200-volt feeder lines (Above)

after which it is used again. The spray system was furnished by the Cooling Tower Co., New York.

The high-pressure hydraulic system operating up-cut shears, the blooming stand roll balance, the ingot manipulator, etc., is composed of two 300-gal. per min. Aldrich triplex vertical pumps, operating at 550 lb. per sq. in. pressure. These pumps are driven by two 150-hp. General Electric Co. motors. A 17-in. Aldrich fixed cylinder-type accumulator, hooked into the line, mechanically operates an unloading device control for the pumps, in addition to electrical safeties. Concrete ballast weights are used to build up pressure.

Oil for use in the steel mills is drawn from a 1,000,000 gal. oil storage located at the older Scullin plant, to a

throughout and all apparatus is well insulated. Current of three phase, 25 cycle, 13,200 volts, is bought from the Union Electric Light & Power Co., St. Louis, and is transformed to 2200 volts for mill drives and 220 volts for mill auxiliaries. Equipment in the station includes a Westinghouse three-phase 550-kva. transformer, three single-bank 1000-kva. transformers for high tension loads, three 100-kva. transformers for 220-volt alternating current mill auxiliaries and a Westinghouse 500-kw. rotary converter for 230-volt direct current.

There are 16 panels in the switchboard, all furnished by the General Electric Co. All of the oil switches are solenoid operated. The board is also equipped with

graphic watt meters which indicate the power consumption of the mill motors at all times. All wiring and switches are inclosed in concrete and the foundation is honeycombed with tunnels, which make it possible to bring in a line or take one out without tearing out any of the walls. Space has been provided for the installation of another rotary converter when the need for it arises. Arrangements also have been made so that power can be thrown in from the foundry unit of the Scullin plant if necessary.

The company has provided up-to-date facilities for the comfort and convenience of its employees. In the office building a first aid room has been fitted up where men may be given initial treatment after injuries. A permanent attendant is on duty in this room at all times. If serious cases should arise, the company has its own ambulance to transport the injured to its hospital at the older plant.

The building containing the offices also houses the washrooms and lockers for the men. There are 600 steel lockers furnished by the Fred Medart Mfg. Co., St. Louis, with three double shower baths, four large lavatories and other toilet facilities on each floor. The entire building, of reinforced concrete and brick, embodies every precaution to insure cleanliness and add to the comfort of employees. A sanitary station of concrete and brick is located in the open bay between the two mill buildings, a most convenient point from the standpoint of the mill hands. All plumbing was furnished by the J. Sheehan Plumbing Co., St. Louis.

The motor houses, the roll shop, the sub-station, the

office building and the comfort station are heated by a hot blast indirect system using steam pipes from the main power house in the older unit of the Scullin works. Air required in the mills is also supplied from that source.

There are six overhead traveling cranes in the plant, of Whiting, Alliance and Scullin design. In the merchant mill building are two 10-ton cranes and in the storage yard two five-ton cranes. The large mill building is equipped with a 15-ton and a 50-ton crane.

The large mill building is 76 x 487½ ft. and is adjoined by a motor house, 35 x 60 ft. The merchant mill structure is 75 x 500 ft., and adjacent to it are a motor house, 20 x 80 ft., the roll shop, 35 x 100 ft., and a carpenter shop, 12 x 80 ft. The office and service building is 50 x 82 ft., and the sub-station, 52 x 54 ft. The buildings were erected and the machinery foundations constructed by the Fruin-Colnon Construction Co., St. Louis. All machinery and equipment, including electrical and pipe work, were installed by the Scullin organization.

Perin & Marshall, New York, were consulting engineers on the construction and equipment of the mills, co-operating with the management of the Scullin company. Active on behalf of the company were F. B. Menner, manager mill department, George H. Raab, mill superintendent, William J. Davis, electrical superintendent, and John Johnson in charge of brick work. H. W. Eales, chief electrical engineer, Union Electric Light & Power Co., St. Louis, assisted in the design of the power station.

## BUYERS IN CONTROL

### Conditions in Canadian Markets Resemble Those in the United States

TORONTO, March 28.—The buyer is still in control of the iron, steel and machine tool markets at all points in Canada, and in a good many cases he has taken advantage of the fact to batter down schedules to a point where he feels it is to his interest to come along and place his business.

Canadian manufacturers are releasing a fair tonnage that had been held up on suspended shipping orders from the American mills. But many of them are drawing from the warehousing interests entirely. The warehouses for weeks past have been buying very little—in fact, the word buying is not the right one to use, as it has been a case of releasing shipments. The steel merchants have been busy liquidating their stocks, many of them still having a tonnage taken from the premium mills when prices were all in favor of the mills. It has now turned out that some of the lines are getting low, with the result that yards having them are able to sell now at their regular prices, making a profit instead of simply turning that much stock into cash. Of course, this refers to only a few lines, but it is an interesting development, and shows the narrow margin on which some of the merchants are carrying on business at the moment.

Bar mill material is moving slowly. Canadian mills for some time were asking 3.75c., but are lower than that figure now. Warehouses for a long time held out for 4.50c. and that is the present warehouse figure here, but it is nominal, and lower than that is being quoted right along.

### Tubes Moving Slowly

Tubular goods are moving slowly, and the size of the business that has come in from lake fleets has been disappointingly small. The small tubes, principally 2-in., are moving out now, as many contracting firms are getting their field equipment in shape for the season's work. Competition from Buffalo warehouses is felt in this district, and even more so in the Niagara district where the power development work is being carried on under Government assistance. That busi-

ness is highly desirable on account of the ready pay, and very little business gets by now without pretty keen competition. Sheets have been in demand recently by interests connected with the pulp and paper industry, and some of the mining concerns in the north country have also been purchasing supplies.

The automobile shops are getting under way again, the best of them doing about 50 per cent now. They are not buying heavily yet, but have released some contracts with outside shops for parts that were held up some months ago.

### Railroads Not Buying Freely

The railroads are not buying heavily. The past winter has been an easy one for this country, snow storms and blockades being almost unknown. The result has been an easy season on equipment, both on the roads and in the shops. The National Railways, showing a deficit of over \$100,000,000 for the past year, are not buying freely.

There are a large number of legitimate inquiries being made, and these are coming from a very wide range of industries. Representatives of British machine tool firms in this country report that they look for decreases in the prices of machine tools from their firms in the very near future. Some of the makers in England have very large reserve stocks piled up, and it is necessary for them to move some of these out.

Small tools are being bought sparingly, and prices are cut pretty close in order to get the business that is passing. Some of the dealers state that they know of jobbers doing business on a 5 per cent profit.

### Little on the Books

The steel mills in Canada have little business on their books. They had expected that the railroads would keep their rail mills busy, but this has not turned out according to expectations. Scotia furnaces are pretty much all banked in the East, and they are getting their billets now from the Dominion Corporation, which is running on a much reduced schedule.

The Ontario plants are faring a little better, but their orders are getting pretty thin. One stack is starting to pile pig iron, believing that the demand will be stronger a little later on. The price quoted is still around \$39, but reports are current of sales being made fairly well under that figure.

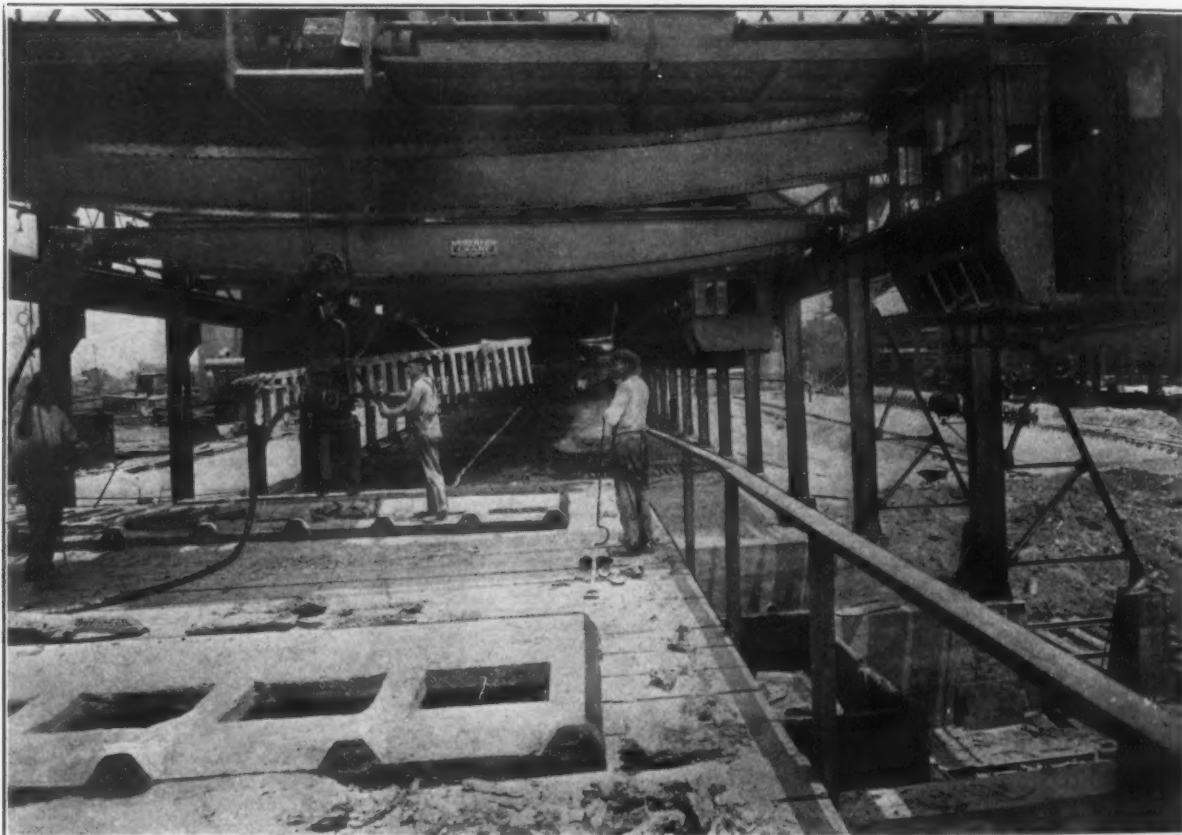
## Pneumatic Hammer for Breaking Pigs

The accompanying illustration shows the pneumatic hammer which the Sloss-Sheffield Steel & Iron Co., Birmingham, is manufacturing for breaking pigs and sows. In THE IRON AGE of Feb. 17 the hammer was described. The following additional information has been obtained from J. P. Dovel, superintendent of blast furnaces for the company:

The equipment consists essentially of a strong pneumatic hammer with valves and ports so arranged and the hammer and piston of such a size that a blow may be struck of sufficient force to break a pig into halves and sever it from the sow at the one stroke. It is used also for breaking the sows into pieces of desired length. As noted in the article mentioned, the cylinder is 8 in. in diameter and the stroke 14 in. The

on the part of the mills to take losses on old stocks. The jobbing trade here can get price concessions from outside mills on desirable orders. A few special sizes of plates are selling for the account of the shipyard at Tacoma, but there is no great volume of trade.

First shipments of structural steel for the new bridge over Hurricane Gulch, in Alaska, on the line under construction by the Alaska Engineering Commission, have left Gary for this port and will be loaded here for Anchorage, Alaska. The tonnage on this job is 1500. The main arch is to be 384 ft. long. The height from the center of the gulch will be 300 ft. The first lot to arrive will be 500 tons. At the same time 50,000 tie plates will be shipped. The commission is operating three caterpillar tractors and caterpillar trailers beyond the end of the steel in hauling supplies to the construction camps, this being the first



As the Pigs of Iron Are Broken by the Pneumatic Hammer They Fall Through the Openings of the Cast-Iron Anvil into the Railroad Cars

ports have been arranged so that no damage will result in case the hammer misses its object and strikes its full force into the atmosphere.

The hammer is suspended flexibly from an electric traveling crane. The bed of pigs is placed on a heavy cast iron frame, which in turn is mounted on a platform above open-top railroad cars. When the pigs are broken they fall through the openings in the frame directly into the cars. The hammer is carried over the pigs by means of a crane and is operated by a hand lever valve at a speed of about 15 strokes per minute, making an average of about one ton of pig iron per minute. Five men are required for the work, which covers all the operations from the casting beds to the railroad cars. The equipment has been used for two years and it is regarded as an unqualified success and a money-saver.

### Disposing of Steel Plates at Seattle

SEATTLE, March 26.—The feature of the week in the steel trade was the general cleaning up of desirable sizes of plates held in the dismantled shipyard stocks, and which have been a deterrent factor in getting the jobbing trade on a healthy basis. It is the opinion of wholesalers that there are not enough of these plates now left to affect the regular demand. Sheet stocks are heavy, and there is reported to be an inclination

use of caterpillar machinery in Alaska. The steamship LaTouche, which has just sailed from this port for Alaska, had three large boilers for delivery to the commission in the North. The boilers came out of the junked shipyard holdover.

The suit brought against the United State Shipping Board asking \$3,220,000 damages for the seizure of the Sloan shipyards in December, 1917, was dismissed in the Federal court at Seattle, which ruled that the board was a Government corporation and not subject to suit.

"If one should roll off—?" is the caption of a photograph in poster form being distributed by the National Safety Council, Chicago. The caption continues: "Ingot molds should not project beyond edge of car. Stand 'em up straight." The photograph depicts two parallel trains of cars loaded with ingot molds, on one the molds being upright and on the other, horizontal and projecting over the car edges.

The Western Purchasing Co., Mills Building, El Paso, Texas, has an inquiry from one of its Mexican clients for 20 55,000-gal., 10 11,000-gal and two 2000-gal. steel tanks, to be delivered at any Atlantic or Gulf seaport. A large quantity of line pipe and well casing is also needed.



# Industrial Application of Powdered Fuel\*

## Method of Transfer of Heat Energy—Temperature Cycles Involved—Design of Combustion Chambers—Some Processes Peculiarly Suited to Powdered Fuel

BY JOSEPH F. SHADGEN

AS the applications of the combustion of finely pulverized solid fuels are developing every day, an independent analysis of the future possibilities seems very timely, not only to survey the progress made during the last decade, but also to discount over-enthusiastic statements. Special emphasis must be laid on the point that pulverization of solid fuels is far from being a cure-all of all combustion troubles; fine grinding permits merely a method of burning coal efficiently, and experience has shown numerous fields of applications where the practical conditions are most favorable for good economic results.

All uses of heating and combustion problems are governed by the phenomena of heat absorption, as the calories released by the chemical oxidation of the fuels have to be efficiently transmitted for the industrial purpose in view. Efficient generation of the heat units is useless unless their absorption is controlled with skill, without waste, to guarantee maximum overall efficiency.

### Importance and Complexity of Study

It follows that the problem of heat absorption is second to none in its immediate bearing on practical results; this fundamental truth should be realized by all users. To burn the coal correctly is only the first half of the combustion problem, as all the calories that are not absorbed by the material to be heated are simply wasted, no matter how efficient the generation may be and regardless of all refinements in burners. The logic is obvious, but nevertheless it needs emphasis because it is forgotten every day and is often pushed in the background.

Heat is transmitted from one material to another in three ways: by radiation, by convection and by conduction; and the study of these three phenomena, combined with the physical changes and chemical reactions involved in each industrial application, form the basis of the solution. The complexity of the problem contrasts sharply with the relative simplicity of laws and factors controlling the generation of heat by combustion of the carbon and the hydrogen of any fuel. The entanglement and coexistence of the different phenomena, the varying relative importance of each, depending on ever-changing conditions, the invisibility of the medium of heat, making losses difficult to locate and waste hard to avoid, are only some of the reasons why the problem is so difficult to solve correctly, and why constant attention and permanent efforts are required to maintain efficiency. The complexity of the problem does not permit in a short investigation of this nature a thorough analysis of all phases; therefore, only the main features and the recent progress will be discussed in a summarized way. A great deal of experience gained in the last years of rapid development is, for obvious reasons, not yet available for publication, and this applies in particular to powdered fuels. In general our knowledge on the subject is most chaotic. This is reflected by the thousand and one practical and more or less equivalent solutions of the same problem. The boiler field illustrates best this statement. Backed

by nearly a century of experience and world-wide development, favored by thousands of theoretical investigations and scientific researches, the laws of nature involved in the steam boilers are not yet uniformly interpreted, as the numerous systems that dispute the favor of the buying public prove.

Parenthetically, it may be opportune, at this place, to point out that the greatest handicap of all heat problems is our inability to measure the energy directly. This impossibility of determining by direct reading of instruments the efficiency as well as the losses of any heat cycle, be it a furnace, boiler or steam motor, necessitates complicated tests that usually lack the wanted accuracy, and the data secured always require interpretations that often lead to controversy.

That unfortunate condition, the main reason of the confusion in the art of all heat appliances, is the cause of the lack of reliable foundations for designers and builders as well as operators. In recent years, with the help of electricity and recording instruments of all kinds (temperature, CO<sub>2</sub> and flow gas indicators), great strides toward more accurate knowledge have been made, but considerable progress remains the task of the future.

### Heat Radiation

The transmission of heat by radiation is usually explained by the theory of transverse vibrations of the hypothetical medium called ether. It is presumed that heat radiation produces a rectilinear periodic disturbance of the ether, and that the phenomena are independent in every way of the presence of matter between the emanating and absorbent body. The velocity of propagation of these waves is the same as the velocity of the light. It is explained also that light and heat waves differ only by the pitch and frequency of their vibrations. Radiant heat is transmitted in the vacuum just as much as in atmospheric conditions and follows always the straight line. The most important factors are the temperature and the nature of the surfaces.

The law of Stefan-Boltzman, which is accepted as practically accurate, indicates that the amount of heat radiated by any body is proportionate to the fourth power of its absolute temperature. This shows the enormous influence of the flame temperature and its effect on the efficiency of heat transmission. The nature of the emanating and receptive surfaces is the second factor of importance. Most of the text book and reference volumes relate experimental figures applying to dark surfaces (lamp black), but no real information for practical conditions can be found. As most of the industrial furnaces are built of refractory material that becomes white hot in the combustion chambers, those figures have to be discounted considerably. A scientific investigation duplicating practical conditions would certainly mean a great step forward, and unify many divergent opinions.

The absorption of heat energy by radiation is of great importance when burning solid fuels in finely pulverized form, because, first, as explained in a previous chapter, the highest flame temperatures can be obtained by the easiest means without preheating the air; second, the uncombined carbon gives a high radiating flame, and, third, the ash particles that soil the combustible matter become small incandescent floating

\*Copyright, 1921, by Joseph F. Shadgen, consulting engineer, New York. The author discussed "The Status of the Powdered Fuel Problem" in THE IRON AGE of Jan. 1, 1920; "Methods of Pulverizing Coal," issue of Feb. 5; "Pulverized Coal Distributing Systems," issue of May 20, and "Science of Powdered Fuel Combustion," issue of Aug. 19.

masses that are carried in the stream of waste gases. This highly radiant ash dust increases the radiant active area, which in some fields is reflected by higher efficiencies. Designers should take advantage of this fact and develop constructions that take care of this peculiarity. It seems that the ash problem has its redeeming feature that counterbalances partly the disagreeable and complicating deposits in the flues.

#### Heat Conduction

The transmission of heat by conduction is the slow process of permeating gradually any solid material, layer by layer, by increasing the temperature of all intermediate strata until equilibrium is attained. This process can be easily visualized by sticking one end of a bar into a forge fire, and all its laws are familiar to every high school student in the elementary course of physics. The heat has to overcome, by contact, the natural resistance of the material to any change of its equilibrium, and this is explained that any change in temperature produces a resetting of the molecular structures according to a certain vibrating motion. This resistance as characteristic to each body is called specific heat, and values for each metal or material are found in all hand or text books dealing with the subject.

Two features of the conduction phenomena are most important in the practical applications. First, the transfer of heat varies considerably with the temperatures, and there are real specific heat factors and mean or average specific heat factors between temperature limits. This has to be taken into consideration in figuring out data, and remarkable confusion exists because often the results of the various experimenters are mixed. The author intends to deal with this subject in a special chapter. Second, the transmission of heat by contact is linked to the factor time; it is impossible to hurry this method of propagating heat energy, and that is why the practical saying, "Let it soak in the furnace," has a theoretical reason. Reheating a big bloom, annealing a heavy casting or equalizing the temperature of an ingot in a pit furnace are operations familiar to all steel men, where the time factor is of the greatest importance, where hurry is least recommendable, for an even temperature within the material is wanted. Consequently it is unwise to push these operations, and that is why furnace capacity has to be carefully determined beforehand.

Conduction of heat is independent of the fuel used to generate the heat, and therefore the method of burning solid fuels in finely pulverized form does not introduce a new feature in that phase of the problem.

#### Heat Convection

Fluid bodies, besides the phenomena of conduction, transmit heat in a third way called convection, which means that the heat energy is carried from place to place and propagated by the currents of the medium itself; this method is characteristic to liquid fluid material, such as water and oils, and to gaseous fluid bodies like air, carbonic acid, or the products of combustion, a mixture of  $\text{CO}_2$ , water vapors and  $\text{N}_2$ . The great mobility of the molecules inside of any fluid mass causes these phenomena, as it makes changes of the relative position, currents and eddies very easy and subjects those materials to movements due to changes in densities subsequent to variations in temperature.

As explained in the previous chapter of these studies dealing with the generation of heat (THE IRON AGE, Aug. 19, 1920), in every furnace where fuels are burned the gaseous products of the combustion become the carrying medium of the heat energy liberated by the chemical reactions involved. The production of these gases is continuous and the function of this flow of hot gases is to give up the heat efficiently while traveling through the furnace. To reach that aim the ab-

sorbing body must be swept by a maximum amount of hot gases; in other words, the material must be completely submerged in the currents of the heat-giving medium. Complete submergence is very important, as the convection phenomena are dependent on the area of contact. If parts of the body to be heated are outside of the currents, the results will be lessened in proportion.

The resistance of any solid to the penetration of the heat from the outside is expressed by a factor called thermal conductivity, and their values for each body have been determined experimentally per area per time unit. For metals this factor is high and for insulators very low.

Further studies of transmission of heat by convection have led the experimenter to suppose that on each surface to be heated by a fluid current, a tiny film exists that creates an additional resistance to the propagation of heat. This film varies with the nature of the fluid medium, and its influence depends mostly on the characteristics of the motion of the fluid. That hot air creates a different film from hot water or oil can easily be conceived, and that great violence in the currents reduces the thickness of that imaginary film and often tears it or at least diminishes its resistance to heat transmission seems logical to imagine and is confirmed by all technical experiments.

Burning pulverized fuels does not bring any new factor into the convection problem except through the presence of the ash particles floating in the hot gas currents. This dust may deposit in the flues or on the material to be heated, and thus create additional resistance by acting as an insulator. The presence of the ash is also annoying in so far as it affects the life of the brick work and sometimes reduces the area of the flues, thus causing shutdown for cleaning or repairs.

#### Research Possibilities

The above considerations amply prove the importance of the flow of gases in any furnace, its influence on the efficiency of the heat transmission and its practical value for the designer. The study of this flow of hot gases inside of the furnace walls has comfortably been completely neglected, and very little attention has been paid to its obvious practical value. The first attempt to put the problem on a scientific basis is the remarkable investigations of the esteemed Russian professor, W. E. Groume-Grimailo, of which fragments were presented to the English speaking public last year. Mr. Groume-Grimailo's efforts resulted in a new theory called the application of the law of hydraulics to design of furnaces, which presents enormous opportunities and opens new aspects to this complicated problem. Several examples of details that are unknown in the art may best illustrate our lack of definite knowledge.

What is the most efficient temperature drop per second in the flow of hot gases? For example, in a boiler installation the combustion chamber pyrometer records 2750 deg. and the stack flue temperature 550 deg. The difference is 2200 deg. In how many seconds should this drop occur? Five hundred deg. Fahr. or 200 deg. Fahr. per second means 4.4 or 11 seconds of travel from one point to the other. In a continuous reheating furnace the heat temperature measured is 3000 deg., the tail end temperature 900 deg., difference 2100 deg. Three hundred deg. Fahr. per min. gives 7 seconds travel time, while 500 gives a little over 4 seconds. The knowledge of the temperature drop per second, together with the violence of the currents giving a low resistance convection film, will determine the most efficient velocities of the hot gases, products of the combustion of the fuel. In all velocity calculations it must be remembered that the temperature is very important, as each change of 490 deg. Fahr. (273 deg. C.) reduces or increases the volume one unit.



What hearth or flue section guarantees that in a billet furnace the iron is completely bathed in the stream of hot gases, presupposing a given production at an acceptable fuel expense per hour or per day? This question tends to eliminate dead pockets and to determine the exact length of the roof above the hearth. Its solution is closely connected to the buoyancy effect and to the stack draft, and should be independent from drawings "obtained confidentially" of a furnace working "fine" in such and such a plant, according to the positive assertion of a foreman.

At this place I cannot help reminding the industrial users of their lack of interest in this most vital problem of their whole production, and of their difference in attitude in connection with furnace problems and mechanical troubles. A furnace is like a machine; it will work best under certain conditions, it can be abused just as easily as a machine; it can be run at full capacity and over capacity, but efficiencies will vary accordingly, just as in the case of a steam engine. But it seems foolish to expect high economies in the one case, while in the other the same facts are accepted philosophically as unavoidable.

#### Combustion Chambers

The object of the combustion chamber is twofold; to assure continuity of ignition and to permit a free development of the flame produced.

In all powdered fuel applications the coal-air mixtures enter the combustion chamber through one or a multitude of burners at velocities varying from 20 to 50 ft. per sec. (according to A. S. Mann of G. E. Co.). These velocities should be kept low to avoid an impinging jet effect, but high enough to surpass the velocity of flame propagation, in order to avoid combustion in the burner before entering the combustion chamber. This can also be obtained in producing the mixture only at the burner nozzle. The quality of the coal and its content of volatile matter will influence greatly the proper design and choice of the air velocities, as anthracite behaves differently from bituminous coals.

To secure immediate ignition the combustion chamber should easily maintain a very high temperature; for that reason they are mostly brick lined, insulated, arched spaces of various volumes and shapes, preceding the furnace itself, and with boilers usually take the shape of Dutch ovens. It is of the greatest importance that the burner flame should not strike a wall, because no refractory can resist for any length of time the constant jet action combined with the fluxing effect of the ash.

The volume of the combustion chamber should permit the ignited gases to expand freely without checking action; the rapid increase in temperature from below 100 deg. Fahr. to 2800 deg. Fahr. or more creates an enormous expansion of the gases (some seven fold) and space must be provided to take care of these volumes.

Furthermore, the velocities in the combustion chamber must be rather low in order to permit complete combustion of the fuel, as every unburned coal particle is not only an unrecoverable loss but creates a deposit that has to be removed at a positive expense. The nature of the fuel to be burned complicates this problem, and each application has to be treated individually, as it seems obvious that lignite behaves differently from anthracite and bituminous coals. The amount of volatile matter and the fineness of grinding have their importance, as explained in conjunction with the burners (*THE IRON AGE*, Aug. 19, 1920). The ideas of the manufacturers about this problem present great divergences; to be frank, the art is too new and the experience gained has not yet crystallized in a definite form; too often, biased commercialism blurs the issues. Co-operation on this point between con-

tractors of equipment and industrial users is badly needed, as without it no progress will be possible.

#### Application of Pulverized Fuels

The industrial applications of pulverized fuels increase daily and new fields are conquered continuously. It has been customary in textbooks to divide the surprising diversity of heat uses into more or less strictly defined groups having main points of similarity. To avoid repetition, this accepted method will be employed in the following summary:

The first group composes all those furnaces in which the various materials to be heated or treated are mixed with the fuel itself; the best known appliances of this type are the foundry cupola, the pig iron blast furnace, vertical shaft ovens for calcining lime, lead blast furnaces, etc. Their main characteristics—the mixture of the fuel with the material—does not make them very well suited for the use of powdered fuels, although various attempts have been made in all countries. It may be interesting to point out that the French metallurgist Basset intends to use powdered coal as a fuel in his new method of making steel direct from ore in a bastard blast furnace. Lead smelting interests have also made experiments in the Canadian Rockies with powdered coal blown into a blast furnace through the tuyeres, but the writer is without further details about the results.

The second main group of furnaces are those wherein the material does not come in contact with the fuel itself, but comes in contact with the flame or hot gases produced by the combustion of the fuel. These furnaces have usually three parts: the combustion chamber with the burners, grates or stokers, the laboratory in the form of a hearth, chamber tunnel or kiln, and the draft mechanism that may be a stack, a fan or an ejector evacuating the gases. Quenandamour in his book subdivides this group into high, medium and low-temperature furnaces, according to their temperature cycles. This group of furnaces forms the original field for powdered fuel, and they present an enormous variety: rotary kilns, puddling furnaces, reverberatory furnaces, all kinds of iron and steel heating furnaces, copper smelting furnaces, open-hearth furnaces, etc.

The rotary cement kiln is particularly well suited to the use of powdered coals; the flame produced is highly luminous, creating a concentrated radiant heat zone very desirable for clinkering, and the ash of the coals is of secondary influence on the quality of cement produced. That is why this industry became the pioneer in the use of pulverized fuel. Those conditions, added to the fact that cement engineers were familiar with crushing and pulverizing problems and appreciated the value of fineness of grinding of an impalpable powder, are responsible for the success in presence of the discouraging failures in other fields at that time.

After 1900 a second phase developed; the interest of copper smelters was aroused and the iron industry became interested for heating and puddling purposes. After ten or twelve years of doubtful success the problems in these fields were solved, principally by the design of short flame burners in opposition to the long flame burners of the cement industry.

Since 1911, when commercial development set in, enormous progress has been made, the numbers of manufacturers increased and a considerable amount of detail problems have been solved. In these fields the use of pulverized fuels will certainly grow, as its economies are proved to-day by many existing installations operating under the most varied conditions. No doubt, with a greater diffusion, the adaptation of the peculiarities of this method of firing will be better understood by both manufacturers and operators.

One problem has up to now been completely ne-



glected—the ash removal. Perhaps the coming competition will force upon the attention of those interested more modern and more economical methods of disposing of the ash.

In several applications belonging to the second group of furnaces the use of powdered fuel is of doubtful advantage, and over-enthusiasm should not outweigh sound logic; for example, in very low-temperature operations such as drying or baking, where temperatures above 300 deg. to 500 deg. are often harmful. In connection with these problems the game is not worth the gamble, because powdered fuel costing 75c. to \$1.50 per ton more than the raw fuel hardly produces any superior economies. The low-temperature cycle required by the object in view is usually obtained by a large surplus of air, and this dilution offsets the advantages of pulverization. Only in cases where a large labor saving or a handling complication counterbalances the surplus cost of the powdered fuel should this method be considered in applications of that nature.

The field of the open-hearth steel furnace is far from being conquered, and the chances of success remain very meager in spite of the lure due to the magnitude of the applications. At first sight the open-hearth furnace seems to be very well suited for pulverized fuel. The coal consumption is large, the temperature required is extremely high and the flame needed should be luminous and radiant. Attempts have been made on a large scale without decided success, or even parity to the producer gas as a fuel. The main reason is the dilemma that in the open-hearth furnace pig iron or scrap is to be refined into steel, and any powdered coal is a soiled fuel by the presence of ash often contaminated with sulphur. The ash influences the chemical reactions of the process as well as the life of the brick work, and complicates the recuperation of the waste heat by annoying deposits. With a commercially assured supply of good coal, low in ash (below 5 per cent) containing little sulphur, the application of pulverized fuel to open-hearth furnaces seems to promise satisfactory results. There are no fundamental changes required in the design of the furnaces, as enough experience has been accumulated to adapt existing construction to the peculiarities of the new method of firing.

The third and last group of furnaces are those where the materials do not come in contact either with the fuel or with the hot gas of the combustion. This subdivision includes large industrial uses, such as crucible steel ovens, retort furnaces for all purposes (gas, zinc, etc.), boilers, stills, etc.

Although the design of these furnaces seems very propitious for the use of powdered fuel, it is astonishing to note that comparatively little has been done in these fields. Only in the last years has the interest been concentrated on the steam boilers, and all indications seem to prove that the method of burning solid fuel in pulverized form presents great possibilities in this enormous field. The experimental period in connection with bituminous coals can be considered past, as large industrial plants as well as public utilities have accepted of late the new method of firing. The mechanical stoker will have a keen competition in the future, and the coming struggle for superiority can be only beneficial to industry in general, and certainly will yield great progress in combustion efficiencies.

Pulverization is actually being applied to low grade mine refuse, such as anthracite culm or river dredgings, and interesting experiments are carried on to burn those fuels, of which enormous quantities are available, in powdered form under boilers. Final success seems to be within easy reach.

Even locomotives and ships have been repeatedly equipped with apparatus to burn coal in pulverized form, in this country as well as in Europe and South

America. The results seem to be gratifying, but no decided superiority has been proved as yet in comparison with hand firing. But it must be remembered that the operations are complicated by side issues that make conclusions very difficult.

There is little doubt that the coming years of economic readjustment will see a healthy development in this new art, whose slogan has been greater efficiencies.

### Housing Conditions Among Steel Workers

Housing conditions in the iron and steel towns of the northern district of the United States are portrayed by description, photographs and tables in the pamphlet published by the United States Department of Labor, entitled, "Housing by Employers in the United States." The district includes the states of Maryland, New Jersey, New York, Pennsylvania, Ohio, Indiana and Minnesota. According to this survey, the housing "presents such a variety of conditions as to make it almost impossible to give a true word picture. The towns range in type from high-class towns, laid out according to town-planning principles, to undeveloped and neglected communities. The houses present a considerable variety in type, material of construction, number of rooms and sanitary equipment.

"Housing conditions in the iron and steel towns of Pennsylvania, Maryland, New York and Ohio are closely similar to those prevailing in the anthracite and bituminous coal region of Pennsylvania. The semi-detached mine type of house is frequently found. In the more settled cities row houses have been built.

"Employers in the iron and steel region of the Eastern and Middle West States house about three employees to each company dwelling and 0.6 employee per room. This calculation is based on information from nine different communities, where 45,075 men are employed and 5528 are housed by the companies. The data relate to 1882 dwellings having an average of 5.3 rooms per dwelling.

"The prevailing size of company dwellings in the northern iron and steel district is four, five or six rooms, houses of these sizes forming, respectively, 27, 25.2 and 28.5 per cent of the total 5722 houses. Sixteen and four-tenths per cent rent for \$6 and under \$7 per month. It may be noted that a very considerable portion (14.3 per cent) rent for \$18 and over per month. This is a larger proportion at such high rental than is found in the case of company houses in other regions and is accounted for by the fairly large proportion of better class houses for the more skilled laborers and members of the supervisory staffs who are accommodated in company houses in this region.

"Over one-half of the dwellings in the region are lighted by electricity—that is, 2885, or 50.4 per cent of the 5722 included in the survey. Over seven-tenths have running water inside—4250 or 74.3 per cent of the total. A very considerable proportion have three-piece bathrooms and gas and electric light connections—namely, 2259 or 39.5 per cent of the total. On the other hand, 1410, or 24.6 per cent, have no modern conveniences of any kind."

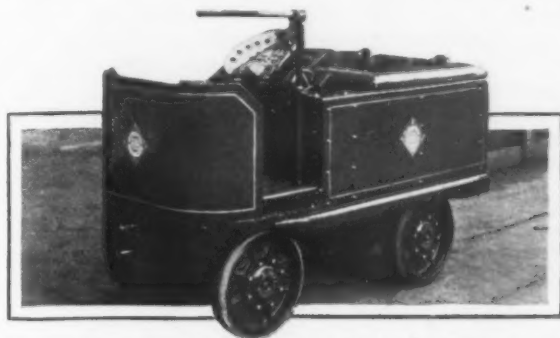
Detailed descriptions of four communities in the iron and steel region are given, the good and bad features being emphasized. The names of the companies are omitted. The pamphlet is No. 263.

The Dravo-Doyle Co., Pittsburgh, has just issued a 32-page illustrated booklet describing the apparatus manufactured by the companies which it represents in Pittsburgh, Philadelphia, Cleveland and Indianapolis. These companies are DeLaval Steam Turbine Co., Trenton, N. J.; the Cochrane Corporation, formerly the Harrison Safety Boiler Works, Philadelphia; American Steam Pump Co., Battle Creek, Mich.; Nordberg Mfg. Co., Milwaukee; Union Iron Works, Erie, Pa.; DeLaval Separator Co., New York City; Lambert Hoisting Engine Co., Newark, N. J.; Erie Engine Works, Erie, Pa.; Dillig Engineering Co., Pittsburgh.

### Storage Battery Tractor

A recent addition to the field of industrial trucks is a four wheel storage battery tractor brought out by the Elwell-Parker Co., Cleveland. It is said to have been designed especially to meet the requirements of iron and steel plants.

The tractor is 87 in. long, 41 in. wide and 45 in. high and has a turning radius of 78 in. Its normal draw bar pull is rated at 400 lb., with a 42-cell A-6 Edison or a 24-cell 15-plate Ironclad battery. The ultimate power before the wheels slip is given as 2400 lb. The weight is 4000 lb., and is said to be distributed in a way that when developing the ultimate power the weight is centered over the drive wheels, except just enough to secure steering contact with the front wheels.



Storage Battery Tractor Designed for Use in Iron and Steel Plants. It may be turned in a 78-in. radius circle

The drive is from a direct connected single motor to a worm reduction on a full floating axle, the power being delivered to 20 x 5-in. drive wheels having 7 in. double row radial and thrust ball bearings. The unit power plant supports the rear of the tractor frame over the drive axle on springs which work in lubricated boxes. The forward, or third point of unit power plant suspension, is a ball in a bracket which with the springs over the drive axle provides a flexible attachment of the power plant, accommodating itself to floor and load conditions. The front axle supports the frame on special springs and the method of lubrication provided supplies oil to axle pads and axle guides as well.

The truck is steered by a hinged adjustable lever located in front of the operator, and the steering mechanism is placed behind the front axle to give clearance and protection for its parts. The steering rod pins are hardened and ground and held in forged yokes, restricting the wear to the lever bushings, which are self-lubricating and renewable.

The frame consists of four heavy channels to which the front and rear bumpers are hot-riveted, the channels being tied together with cross braces and plates. At the front is a heavily ribbed bumper flush with a high type dash of  $\frac{3}{4}$ -in. plate which protects the operator. It is provided with a double coupling slot with a pin inside the dash so that the operator may lift it without leaving his seat. The rear bumper has a 2-height, 3-position swivel spring draw bar coupler.

The tractor has three speeds in either direction and the spring seat is attached to a hinged plate which operates a safety switch or circuit breaker. When the operator sits down his switch closes the circuit breaker if the controller handle is in neutral; then power is applied, the foot-brake released and the tractor starts. If the controller is not in neutral the circuit breaker will not close. When the operator dismounts the breaker is opened and the brake set. The controller is beneath the seat and extra heavy wire connects the motor fields and brush studs to a terminal block in the controller compartment. There are but seven controller fingers. The motor is large and is totally inclosed.

The citizens of Evansville, Ind., have raised \$250,000 to be used for the purpose of bringing new industries to the city. Under the plan drafted by the Chamber of Commerce, all companies locating their factories there will receive a bonus amounting to 5 per cent of their pay roll for a period of five years.

### Trained Engineers in Production

Discussing and deploring, in the February number of *Engineering Education*, the scarcity of college-trained engineers in the ranks of production managers, Prof. John Airey, University of Michigan, bases his thesis on C. R. Mann's estimate that less than 5 per cent of the production managers of the United States are college men. He points out that salaries of production managers are fully equal to those in technical work, where 50 per cent of the men are college trained, and asks: "Why should 50 per cent of men engaged in the latter have State-subsidized brains and only 5 per cent of those engaged in the former activity?"

Quantity production, a development almost wholly of the twentieth century, one to which there is seemingly no finality, and one peculiarly indigenous to America, is represented as having drifted away so definitely from engineering that the newly graduated engineer considers it beneath his dignity to go into crude production. And the very development of this quantity output itself is retarded by the side-tracking, into the more technical fields, of men whose high training could give inestimable impetus to its progress. He blames too high specialization in college training as one of the reasons resulting in responsible positions in production being filled by the survival of the fittest from the shop, with the handicap of meager education, and concludes:

"Just as the non-com. is the backbone of the Army, so the foreman is the backbone of a factory—the last link between the management and the men. If a stream of college trained men spent a transitory period as foremen in the factory instead of in pseudo-gentility in an office or laboratory, often occupied with inferior work, what a wholesome sociological influence this leavening would have on the rank and file of industry, and per contra on themselves. It is an interesting reflection."

### Carbonizing Compound Press

A special machine for pressing plastic carbonizing compound about ring gears which is an adaptation of the Hanna type pneumatic riveting machine is being offered by the Hanna Engineering Works, Elston Avenue, Chicago.

The machine illustrated has an 18 in. reach, a 15 in. gap and a pressure of 20 tons, but various sizes can be furnished. The operation is described as follows: The gears are placed on the special platen, plastic compound spread on the teeth and forming die placed on the top. The foot treadle is then operated, resulting



Hanna Carbonizing Compound Press. The reach is 18 in., the gap 15 in., and the pressure exerted, 20 tons

in the packing of the compound. Generally a stack of gears about fourteen high are placed in the heat treating furnace and when ready they are removed, the compound is shaken off, and the gears are dipped in pickling vats.

The powerful pressure required is exerted through a mechanism of toggles, levers and guide links to give effective die movement. The toggle movement, which produces wide die opening, merges into a simple lever motion, giving a predetermined pressure on the dies for the last portion of the die travel.



## COST OF LIVING

### Trend Still Downward According to Statistics of National Industrial Conference Board

The National Industrial Conference Board's estimate of changes in the cost of living to March 1, 1921, shows that the cost of living among wage-earners in the United States has fallen 4.4 per cent during February, and was 68.6 per cent higher on March 1, 1921, than it was in July, 1914, as against 76.3 per cent higher than the 1914 base on Feb. 1, 1921. There was a drop of 35.9 points or 17.6 per cent between July, 1920, the highest point reached since 1914, and March 1, 1921.

It should be noted, however, that the percentage of decrease from a higher to a lower base is always less than the percentage of increase from the same lower base to the same higher, although the change in index points is the same in both cases. Thus, while a drop of 35.9 points from an index of 204.5 to an index of 168.6 represents a decrease of 17.6 per cent, a rise of 35.9 points from 168.8 to 204.5 represents an increase of 21.3 per cent. In the same way the drop of 4.4 per cent from February to March represents a corresponding increase of 4.6 per cent.

Changes in the average cost of living in the United States between July, 1914, and March 1, 1921, are shown in the tabulation below:

	Relative Importance in Family Budget	July, 1920	February, 1921	March, 1921
Food .....	43.1	119	72*	58*
Shelter .....	17.7	58	66	66
Clothing .....	13.2	166	74	69
Fuel and light .....	5.6	66	98	97
(Fuel) .....	(3.7)	(92)	125	(120)
(Light) .....	(1.9)	(15)	45	(52)
Sundries .....	20.4	85	90	85
Weighted average of all items .....	100.0	104.5	76.3	68.6

\*Food price figures are for the 15th of the preceding month, from the United States Bureau of Labor Statistics.  
†Increase.

The continued downward movement in the cost of living during February was due largely to the big drop in the cost of foodstuffs as shown by the Bureau of Labor Statistics index numbers of retail food prices. Average clothing prices declined slightly, although there was an increase in the cost of a number of items in the woman's clothing budget. Average rents remained stationary; the cost of coal and of certain sundries dropped while average rates for light advanced.

### Wholesale Commodity Prices Falling

Coincidentally with the wide-spread cut in wages—steel mill and other—the Bureau of Labor Statistics reports steady downward progress of the wholesale cost of commodities. But while the former goes by fits and starts, so to speak, with a very material drop on a definite date and then a period of stabilized wages in the plant affected, the cost of living is dropping at a fairly uniform rate, month by month.

With the average of 1913 as the basis, at 100, the index for February was 167, as compared with 177 for January and with 249 for February of last year. Thus, of the total advance of 149 points for February, 1920, the year's recession has become 82 points, or 55 per cent of the advance. Not all items quoted have shared in this extent of drop, but some have gone far beyond it. Thus 79 per cent of last February's excess over 1913 in farm products has already been liquidated.

Metals and metal products, which had one of the smallest percentages of advance, have dropped during the year from 189 to 146, thus losing about half the advance. Recent increases in the price of coal, however, has resulted in augmenting the item of fuel and lighting from 187 a year ago to 228 in January, followed by the present drop to 218. The highest item on the list is house furnishings. The table which

follows is the index of wholesale prices, by groups of commodities.

	1920 Febru- ary	1921 Janu- ary	1921 Febru- ary	Recession in One Year Points	Per Cent
Farm products .....	237	136	129	108	79
Food, etc. ....	244	162	150	94	65
Cloths and clothing.....	356	208	198	158	62
Fuel and lighting.....	187	228	218	*31	..
Metals and metal products.	189	152	146	43	48
Building materials .....	300	239	222	78	39
Chemicals and drugs....	197	182	178	19	20
House-furnishing goods..	329	283	277	52	25
Miscellaneous .....	227	190	180	47	37
All commodities .....	249	177	167	82	55

\*Advance. †Of the February, 1920, advance.

### Safety and Efficiency

Two addresses delivered recently before the Philadelphia meeting of the National Safety Council stressed the importance of considering the after effects of an accident as well as its immediate results. L. A. DeBlois pointed out that "the shock to the injured man's physical system may be profound and may leave its mark as handicap through life, while the shock administered to his status as an individual wage earner may alter his whole future and that of his family." As to the employer, orderly routine in the shop is interrupted, witnesses distracted, the man replaced by a less skilled worker who requires more supervision,

Percentages of Increase in the Cost of Living Above Average Prices in July, 1914, to		Percentages of Decrease in the Cost of Living on March 1, 1921, from Average Prices in	
February, 1921	March, 1921	July, 1920	February, 1921
72*	58*	27.9	8.1
66	66	5.1†	No change
74	69	36.5	2.9
98	97	18.7†	.5
125	(120)	(14.6†)	(2.2)
45	(52)	(32.2†)	(4.8†)
90	85	No change	2.6
76.3	68.6	17.6	4.4

produces less and spoils more material—besides both direct and indirect financial losses whose ramifications are difficult fully to trace.

D. W. Petty, dealing directly with the subject of electric cranes, discussed in detail the necessity for overhoist limit stops to forestall the probability of accidents due to any one of a dozen causes. He discussed carelessness on the part of the operator, both with and without the automatic stop, and concluded that the limit switch must be treated as a safety switch and used only to prevent accidents.

Studies of the intelligence of nearly 6000 students in Ohio State University, based on the rating used by the United States Army, are reported in the February *Engineering Education* by Prof. E. F. Coddington. He finds that 52 per cent of the students would be placed in the Army class A, with the distinction of possessing very superior intelligence. An additional 38 per cent would be placed in class B, with superior intelligence. The 90 per cent in these two classes, comparing with the best 25 per cent of the rank and file who served in the Army during the late war, leads Professor Coddington to infer that 90 per cent of engineering students are selected from the best 25 per cent of our American youth.

The electrical cleaning of gases as applied to blast furnaces is to be discussed before a meeting of the Cleveland section of the Association of Iron and Steel Electrical Engineers on April 11 by N. H. Gellert, president Gellert Engineering Co., Philadelphia.

Fire caused about \$20,000 damage March 18 at the benzol plant of the Brier Hill Steel Co., Youngstown, Ohio. A spark from an electric motor is said to have ignited a quantity of benzol.

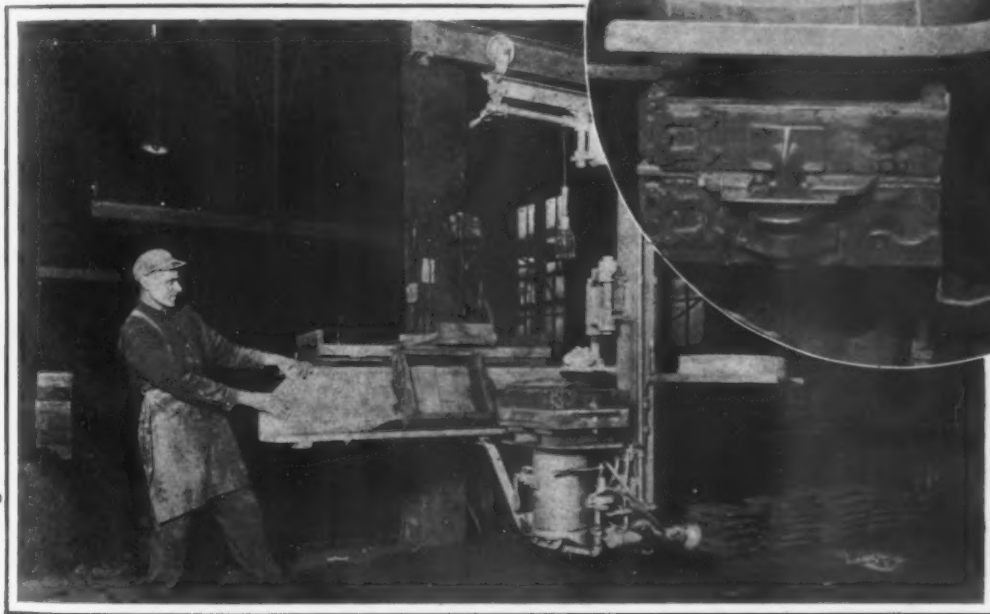


### Suspended Molding Machine Improved

A number of improvements, it is announced, have been added to the Howe-Teetor suspended molding machine, manufactured by the R. J. Teetor Co., Muskegon, Mich.

The new features include a swinging riddle shelf. The riddle slides on an angle frame which swings on the supporting column of the machine and permits the molder to shake down the sand by merely pushing the riddle back and forth. As the shelf is pivoted on the column it may be pushed to one side when not in use.

Another new feature lies in the provision made for lifting the legs of the machine to the level of the bottom of the body, thus permitting movement of the machine over completed molds on the floor. This feature is said to be of particular convenience in malleable foundries where heats are taken off at various times from different furnaces. A mechanism for reversing the machine can be supplied when desired, although regularly the machine is furnished with a rigid overhead trolley. The machine can be equipped with either



Riddling Sand with Swinging Riddle Shelf. The shelf may be pushed to one side when not in use. The illustration at the left shows the air legs lifted to permit moving the machine over completed molds

a plain bench or a standard air squeezer, and changing from one to the other is easily effected.

The Howe-Teetor suspended molding machine was described in detail in the March 4, 1920, issue of THE IRON AGE, page 665.

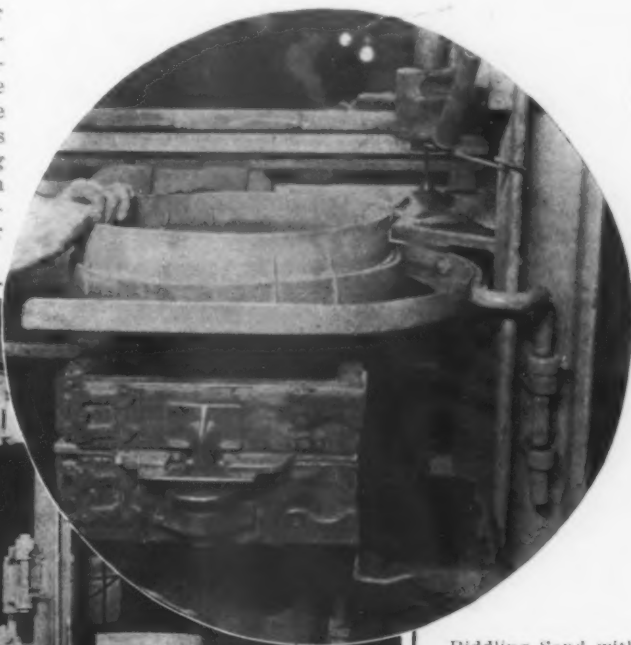
### Wheeling Steel Corporation Meeting

The annual meeting of the Wheeling Steel Corporation will be held Tuesday morning, April 26, at the Auditorium, Wheeling. It is announced that 99 per cent of old stock of the three subsidiaries has been exchanged for stock of the new corporation. The stock was exchanged on the following basis: For one share of LaBelle Iron Works, preferred, one share of Wheeling Steel Corporation, preferred B; for one share of Wheeling Steel & Iron Co. three-eighths share preferred B or five-eighths common, Wheeling Steel Corporation; for one share Whitaker-Glessner Co., one-third preferred B or two-thirds share common Wheeling Steel Corporation. The divisions of the holdings are as follows: LaBelle Iron Works, 41.49 per cent; Whitaker-Glessner Co., 37.35 per cent; Wheeling Steel & Iron Co., 21.16 per cent. The organization of each subsidiary company is still retained by under unified control of the new corporation. At the annual meeting the statement of the three subsidiary companies will be consolidated into one statement and submitted to the stockholders.

The Ungar Bros. Co. has started production at its plant in Youngstown, Ohio, to manufacture stovepipe.

### Steam and Electricity in Steel Mills

G. E. Stoltz, general engineer of the Westinghouse Electric & Manufacturing Co., Pittsburgh, addressed a sectional meeting of the Association of Iron and Steel Electrical Engineers on the evening of March 18 at Youngstown, Ohio. His subject was "Relative Cost of Rolling Steel—Steam vs. Electric-Driven Mills." Basing his statements on actual cost figures in various plants where the two different kinds of power are used, the speaker declared that electricity was the more economical form of motive power for rolling mills, regardless



of size, and was more satisfactory in other respects. He stated that as 20 years ago electricity began to displace steam as a power for the smaller units in iron and steel mills, the industry has reached the stage where the same development is taking place with respect to larger rolling units. It was informally pointed out that it is possible to conduct electric power economically long distances for rolling mill use. The 84-in. and 132-in. plate mills of the Brier Hill Steel Co., located at Mosier, immediately west of Youngstown, are supplied with electric power generated 18 miles away, at the Lowellville central station of the Republic Railway & Light Co. and carried over a high transmission system.

The fire in the Winthrop Harbor, Ill., plant of the Austin Machinery Corporation on March 22, will not, according to officials of the corporation, in any way interfere with production and prompt delivery of Austin trenching machines, backfillers, building mixers, pavers, draglines and shovels, as practically all lines of Austin machinery are also being built at the plants at Muskegon, Mich., as well as at the former plant of the Toledo Bridge & Crane Co., Toledo, Ohio.

An official of the Truscon Steel Co., Youngstown, Ohio, states that new business for the past several weeks has been running at the rate of 75 per cent of capacity, against shipments of 50 per cent. In view of this situation, it is planned to increase the level of operations to the ratio of new orders.

### Bickford-Switzer Drill Grinder

A drill grinding machine in which the drill is held in a chuck and given a combined rotative, eccentric, swinging motion is offered



Bickford-Switzer Drill Grinder

by the Bickford-Switzer Co., Greenfield, Mass. The motion given by the crank not only gives the drill the correct radial and lip clearance, but also brings the two lips consecutively in contact with the grinding wheel. As a result both lips are sharpened at the same time and the drill is ground true to its axis.

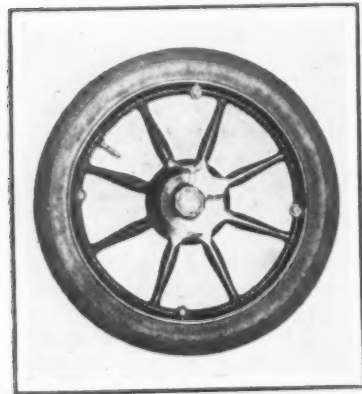
The machine is motor driven from a lamp socket and takes drills from  $\frac{1}{8}$  to  $\frac{3}{4}$  in. in diameter. It is said that its use does not require a skilled operator, and that anyone who can read an ordinary scale can grind a drill accurately with this machine. Locating the drill centrally is taken care of by supporting the back end by a cup center, and the front end by two special jaws which locate and grip the working part of the drill. The operating of the machine consists of simply setting the levers and turning the crank.

It is claimed that the drill when sharpened will not cut more than 0.002 in. larger than its nominal size, thus saving in some instances the necessity of reaming the work on which the drill is used. One minute is given as the time required for setting up and for the grinding operation.

It has been demonstrated that slightly bevelling off the corner of the cutting lip increases the usefulness of a drill. With this in view provision is made on the machine described for rounding the corners while the drill is being sharpened.

### Drop Forged Steel Wheel

A steel wheel in which the hub, brake drum, spokes and felloe (or rim) are drop forged in one piece, eliminating welds and the use of rivets or bolts, is being produced by the Jefferson Forge Products Co., Detroit.



Automobile Wheel Drop Forged in One Piece

It is said to be practically as light as the standard wood wheel and naturally of much greater strength. It is straightened in manufacturing in a manner to insure the felloe's running true. In a road test at a speed ranging from 15 to 25 miles per hour a car equipped with these wheels and carrying four heavy passengers

was deliberately skidded into the curb twenty successive times. It is claimed that no damage resulted to either the wheels or to the car and that when the wheel was removed and tested for alignment, it was found to be true. Used on commercial vehicles the drop forged steel wheel is counted on to reduce the wheel weight considerably and to stand the abuse of rough roads and heavy loads to which commercial vehicles are subjected.

### Electric Alloy Steel Co. Operations

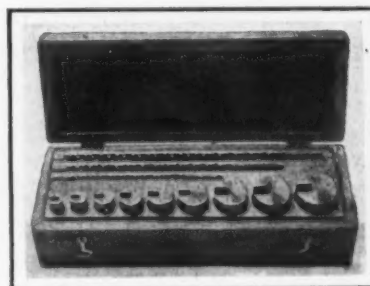
The Electric Alloy Steel Co., Youngstown, Ohio, operating a plant at Charleroi, Pa., reports that demand for high-speed tool steel is especially strong and is coming from many important consuming interests. Prices have been well sustained. February business was the best as to both volume and shipments since the organization of the company. Demand is partially attributed to the variety of uses being developed for such steel.

The company is completing new installations at its plant, and its equipment will include, when the new work is ready, two six-ton electric furnaces and one crucible furnace, with an aggregate capacity of about 55 tons every 24 hours. Present plans provide for the addition of another 3-ton electric furnace. Structural work is also near completion for housing furnace and rolling mill extensions. The plant is equipped to roll flats, rounds, hexagons and other shapes. It also contains equipment for grinding and chipping.

A warehouse was recently opened in New York. Branch offices are maintained at New York, Philadelphia and Detroit.

### Broach Keyway Set

For cutting keyways where the nature of the work does not require a broaching machine, the Velco Mfg.



Broach Keyway Set Used in Connection with an Arbor Press

Co., Inc., Greenfield, Mass., is offering the Broach Well keyway set illustrated.

The tools are grouped in convenient sizes and used in connection with an ordinary arbor press. A tool steel broach, having the Velco patented tooth, is guided in an accurately sized bushing which adapts the cutter to the bore. The keyway is cut by placing the bushing beneath the press and pressing the broach through the work in exactly the same way that an arbor would be removed. It is said that the keyway thus produced is accurate and has a smooth finish. In cases where more than one keyway is required in a single piece it is only necessary to turn the piece on the bushing to the required angle and repeat the operation.

For cutting keyways of special shapes extra broaches can be furnished. The wood case is 13 x 5 x  $3\frac{1}{2}$  in.

### Foreign Trade Financing Corporation

Latest developments in the organization of the \$100,000,000 Foreign Trade Financing Corporation are as follows:

The passage by 10 State legislatures of "enabling acts," permitting State banks and trust companies to purchase stock in the corporation.

The appointment of a committee on policy to make a survey of world trade and to decide when the corporation should open its doors for business.

The announcement that an amendment to the Federal Reserve Law, under which the Foreign Trade Financing Corporation is to operate, will be introduced in Congress to permit the corporation to call for payments on its subscriptions as they are needed instead of at the arbitrary periods now specified by the law.

At the annual meeting of the Towmotor Co., Cleveland, on March 21, the following officers were re-elected for the coming year: F. W. Sears, president; L. M. Sears, vice-president and general manager; Ernest McGeorge, secretary, and A. G. Simon, treasurer; directors, F. W. Sears, L. M. Sears, Ernest McGeorge, A. G. Simon and L. W. Sheets.

# The Russian Collapse and Its Lesson at Home

## Sovietism an Extreme Form of Capitalism —“Industrial Freedom” That Is Actual Slavery—Contrast of American Conditions

—BY STERLING H. BUNNELL.\*—

**R**EMOTE as we are from direct contact with the domestic affairs of the European nations, it is not surprising that the majority of Americans have little real knowledge of the details of the gigantic experiment of communist government in the world's largest country, Russia. This first and greatest attempt at the organization of a nation according to the ideals of socialism is extremely interesting, although at the same time ruthlessly cruel on a scale perhaps unsurpassed even by the recent great war. The same lack of opportunity to observe the details of the ordeal through which the Russian people are passing makes possible the present propaganda spread throughout the United States as in other countries by agents supported by Russian communist funds. Their object is the revolutionary overturn of our own Government and the seizure of all private property in the name of the “proletariat,” or non-property-owning class, which is imagined by the theories of socialism to form the bulk of the population.

### Soviet Agitators in the United States

While there is little probability that this wild plan will ever come into being in the United States, the effect of such agitation by even a small minority of energetic and determined leaders of the forces of discontent may well cause enormous disturbance and loss, perhaps even bloodshed and disaster. There are estimated to be about three million members in the radical labor unions of this country, affiliated with the Third International of Moscow and firmly believing that worldwide revolution is imminent. About two-thirds of the foreign-language publications in this country are of extremely radical character and circulate among that class of unskilled and semi-skilled laborers upon which American institutions have made the least impression. Unless managers and employers of labor take an interest in counteracting the misinformation which is being supplied to these workers and their converts among the more intelligent men who ought to be less easily misled, very serious trouble is ahead of us even in the United States.

The strength of the soviet propaganda in the countries outside of unfortunate Russia is in the contention that sovietism means industrial freedom for the masses. The admitted existence of widespread misery, want and starvation in Russia is laid to the fact that the other nations refuse to ship supplies to Russia. No satisfactory reason can be given by the defenders of sovietism for the failure of Russia under communism to feed even her own population, whereas formerly she produced a huge surplus of food for export. The truth is that sovietism or communism is nothing else than a rigid system of universal slavery of every citizen, with the State as the owner and slave-driver; and slavery is not the most productive of working systems. This reality ought to be clearly understood by every worker who may feel that the present scheme of things in these trying times affords him less freedom than communism.

### The Case Against Capitalism

The starting point of communistic teaching is the belief that the owners of industrial plants take away and appropriate for themselves a large part of that which the workmen produce; in other words, that modern industry is carried on under a system of legalized

robbery. The truth is, of course, that the portion of the workers' product which is set aside by the management is the reserve necessary for building more factories for other workers who are to come. Industrial capital represents, not the capitalist's personal luxury, but the mechanical equipment by which the workers are enabled to earn their own living. In the operation of machinery, or the use of tools, it makes no difference to the operators' present working conditions or wages, who saved the money to provide the plant; the point is that some one, instead of eating, drinking or wearing out his entire income, was willing to use part of it in the purchase of machines with which other men might work out their share of the world's production.

The radical's teaching is that the capitalist is one who takes for his own use a part of another's earnings; therefore, a thief. The fact is that the capitalist is he who puts money into means of production, as factories or railroads, by which others may earn a living. A man or woman who lives in luxury and possesses great non-productive properties, such as magnificent residences or large tracts of unused land, is better defined as a property-owner, than as a capitalist, for capital is presumed to be productive.

### Capital Equips the Workman

There has been much discussion of the advisability of limiting the possession by individuals of great non-producing properties, which other men would be glad to make productive for the good of many. Thus, many of the great landed estates of Europe have been made to pass from the hands of those who held them from development, to be divided up into small parts and placed in the hands of others who were ready to cultivate the land and produce food. But there is no argument as to the desirability of the existence of the most efficient machines and tools, in factories large enough to permit the greatest output for the least toil. Any person who is willing to spend his money for buildings and machinery so that men may find jobs and produce goods for themselves and others for use, instead of spending it for his own luxurious living, is a public benefactor as well as a capitalist. The waster, the parasite, is the man who devotes his income solely to his personal comfort or luxury, whether he be the very uncommon millionaire with no occupation, or a casual worker drifting about with never a dollar to spend on anyone but himself.

### Socialism's Failure

“Worker, take your machine!” says the Marxian socialist. In Russia, the worker did; and found that alone he could not run it. Then he turned it over to his group, but the group collectively was no wiser; and eventually the worker's machine with thousands of others passed into the ownership of a huge and soulless corporation, the communist state. Under capitalism the worker complained that part of the product of his effort went to support one or two clerks and the manager, and that the latter in his private office was too distant to pay attention to the workers' personal grievances. But under communism, the worker finds that he must support twenty clerks and a horde of new officials unknown to the individual efficiency of capitalism. His petty grievances of other days seen nothing in comparison with the fact that he is now the absolute slave of a distant autocracy, bound, like the serf of a century ago, to one particular job, working under com-

\*Consulting engineer Bunnell, Macy & Henriques, 103 Park Avenue, New York. Mr. Bunnell spent some months in Russia in the period of the war, in the interest of trade with the United States.

(Continued on page 881)



# Heavy Decline in Steel and Machinery Exports

February Statistics of Foreign Commerce Show  
Decided Change Compared with January  
— Imports Drop to a Very Low Point

Washington, March 29.

**D**ECLINES are shown in the volume of machinery and iron and steel exports and imports in February as compared with January, according to advance official compilations of the Bureau of Foreign and Domestic Commerce. The February figures are

Exports, January, 1919, to February, 1921, Inclusive			
	All Iron and Steel	Gross Tons Pig Iron	Semi-finished Material
January, 1919	360,456	35,793	11,594
February	234,793	20,178	10,407
March	344,506	22,054	8,176
April	408,204	16,300	11,488
May	447,050	32,233	20,771
June	544,580	39,540	46,016
July	287,823	38,373	21,318
August	396,743	36,071	36,162
September	363,505	18,991	37,513
October	302,456	14,108	20,713
November	295,045	21,429	13,211
December	254,676	14,612	21,538
Total	4,239,837	309,682	258,907
January, 1920	333,601	18,468	19,937
February	308,185	15,739	22,693
March	417,216	22,740	30,444
April	395,120	14,608	19,032
May	420,359	13,032	16,370
June	402,707	17,075	29,811
July	458,866	29,647	17,243
August	431,484	22,645	20,920
September	409,200	22,724	18,113
October	452,015	17,296	11,853
November	434,297	13,929	7,042
December	498,765	10,055	3,415
Total	4,961,851	217,958	216,873
January, 1921	547,394	3,710	315
February	393,328	1,307	92

not surprising in view of the world-wide depression in industry.

Machinery exports for February were valued at \$43,831,440 as compared with \$56,705,507 in January, and represented an increase over February of last year, when the total was \$32,164,178. For the eight-month period ending with February of the current year the total was \$340,968,784 as against \$238,574,280 for the same period one year ago.

Exports of iron and steel products listed in THE IRON AGE table aggregated 393,328 gross tons in

Imports of Iron and Steel				
	Gross Tons			
	February	1921	Eight Months Ending February	1921
Ferromanganese	2,939	854	23,420	39,952
Ferrosilicon	821	315	10,936	6,266
Pig iron	9,436	421	77,401	41,585
Scrap	17,324	1,921	158,787	77,093
Bar iron	48	198	1,527	3,394
Structural steel	21	34	775	1,092
Billets, without alloys	4,948	...	17,032	747
Steel rails	217	5	7,373	28,434
Sheets and plates	84	635	855	1,210
Tin andterne plates	32	36	245	295
Wire rods	104	27	509	4,279
Total	35,974	4,446	298,860	204,257
Manganese ore and oxide	4,106	53,874	132,928	493,968

February, this year, valued at \$101,205,061 as compared with 547,394 gross tons in January, valued at \$137,803,395, a decrease of 154,066 tons, or a little more than 28 per cent. For February, 1920, exports totaled 302,185 tons, valued at \$71,899,723. For the eight-month period ending with February of this year the value was \$839,251,175 as compared with \$562,088,927 for the corresponding period of last year.

Imports of iron and steel herein listed dropped to the unusually low point of only 4446 tons for February this year, with a value of \$2 204,492 for all the commodities carried in the bureau's table, and for the

eight-month period the aggregates of comparative figures were 207,257 tons and \$32,964,467. Imports in January totaled 16,822 tons, the value of the entire list carried by the bureau being \$2,549,811.

In comparing figures, it is necessary to point out the statement of Secretary of Commerce Hoover that since last August they have not been entirely accurate, and it has been found that the errors are reflected through February, though the discrepancies during the months of this year apparently are only slight. Efforts to balance the figures of January and February reflect inaccuracies, as, for instance, the total of iron and steel exports for the seven-month period ending with January, amounting to 3,199,343 tons, when added to the February exports of 393,328 tons gives an aggregate of 3,598,671 tons, as compared with 3,594,532 tons, the total reported for the eight-month period, a difference of 4139 tons. Mr. Hoover has said, however, that the figures in the future will be correct.

The machinery exports in February showed a de-

Exports of Iron and Steel				
	Gross Tons			
	February	1921	Eight Months Ending February	1921
Ferromanganese	77	42	1,884	3,097
Ferrosilicon	89	2	333	523
Pig iron	15,673	1,307	179,478	117,897
Scrap	2,592	2,501	29,175	168,154
Bar iron	2,542	2,420	21,846	36,775
Wire rods	9,429	985	64,753	55,877
Steel bars	39,182	39,344	358,120	429,326
Ingot, blooms and billets	22,693	92	193,109	78,993
Bolts and nuts	2,549	4,599	19,889	30,487
Hoops and bands	3,434	3,649	25,188	33,270
Horseshoes	119	104	1,773	1,346
Cut nails	66	27	966	3,354
Wire nails	4,907	4,129	43,352	69,864
All other nails, including tacks	764	739	5,946	8,744
Cast pipe	3,873	8,102	26,831	59,534
Welded pipe	14,480	64,053	128,877	302,624
Radiators and cast boilers	229	270	4,857	4,088
Railroad spikes	1,244	1,225	10,649	11,368
Steel rails	31,241	59,390	347,616	431,823
Galvanized sheets and plates	8,233	8,712	60,589	75,822
All other sheets and plates	855	1,509	21,890	20,413
Steel plates	62,281	66,191	434,845	661,490
Steel sheets	8,879	14,371	93,195	124,865
Ship plates, fabricated	877	3,462	11,600	30,609
Structural steel	30,344	65,012	197,161	432,741
Tin andterne plates	19,199	23,376	162,111	164,889
Barb wire	9,691	4,629	163,671	83,383
All other wire	6,743	13,086	110,906	153,176
Total	302,185	393,328	2,720,610	3,594,532

crease in nearly all of the items as compared with January. Some of the declines are especially marked. Stationary gas engines to the value of \$612,842 were exported in January. In February they were valued at \$39,774. Even more decided is the decline in the February exports of steam engines, which were valued at \$2,715,425, as compared with \$4,607,720 in January. Comparative figures with respect to sugar mill machinery were \$2,843,796 and \$4,196,585. Lathes to the value of \$442,491 were exported in February as compared with \$818,068 in January. Principal buyers of metal working machinery were the United Kingdom, Canada, Japan and France. These countries, together with Mexico, Argentina, Australia, China, Peru and Chile, were large buyers in February and for the eight-month period of sewing machines with the United Kingdom leading.

As in the case of machinery exports, those of iron and steel for February showed a decline in most items when compared with January. Relatively the declines

## Machinery Exports

	February		Eight Months Ending February	
	1920	1921	1920	1921
Adding machines	\$ 234,456	\$ 374,656	\$ 2,183,213	\$ 5,077,833
Air-compressing machinery	498,935	635,222	2,340,363	4,411,875
Brewers machinery	24,592	20,064	167,086	389,981
Cash registers	520,146	403,737	3,067,110	3,050,159
Parts of	20,087	26,775	206,332	279,538
Concrete mixers	34,228	64,947	219,679	843,987
Cotton gins	25,384	38,012	101,316	251,583
Cream separators	161,729	56,739	580,903	629,560
Elevators and elevator machinery	118,421	475,345	1,374,705	1,504,239
Electric locomotives	43,337	123,325	811,111	282,572
Gas engines, stationary	74,087	39,774	366,616	500,116
Gasoline engines	2,293,706	1,523,408	18,592,892	20,746,556
Kerosene engines	1,088,830	1,003,220	5,208,368	7,634,396
Steam engines	4,702,962	2,715,425	26,475,766	35,632,479
All other engines	204,553	302,561	1,755,108	3,137,512
Boilers	449,607	1,037,791	4,246,382	7,326,906
Boiler tubes	367,437	938,098	2,825,811	5,680,184
All other parts of engines	2,028,034	1,806,344	14,908,016	16,223,634
Excavating machinery	18,318	297,667	712,021	1,910,917
Milling machinery, flour and grist	36,616	359,200	914,354	1,686,290
Laundry machinery	63,104	138,080	678,206	779,268
All other	46,454	47,008	277,400	712,791
Lawn mowers	18,564	44,658	217,819	409,387
Lathes	587,348	442,491	5,599,701	4,301,245
Other machine tools	895,675	728,250	7,331,897	8,630,952
Sharpening and grinding machines	261,209	148,410	2,890,501	2,253,225
All other metal working machinery	2,024,929	1,412,630	16,593,783	12,113,839
Meters, gas and water	48,352	47,303	452,247	580,563
Mining machinery, oil well	293,571	2,237,710	2,251,709	7,533,716
All other	1,125,413	1,378,683	5,416,810	7,075,348
Paper mill machinery	86,557	377,476	1,899,151	2,690,054
Printing presses	369,874	1,167,192	3,610,233	7,634,748
Pumps and pumping machinery	793,841	2,344,351	6,131,740	12,582,771
Refrigerating and ice making machinery	281,717	242,321	1,329,911	2,791,832
Road making machinery	78,009	86,095	649,833	771,135
Sewing machines	1,313,965	723,399	8,494,687	9,001,986
Shoe machinery	148,782	371,489	1,896,880	2,241,980
Sugar mill machinery	638,739	2,343,796	11,232,282	23,735,171
Textile machinery	740,459	2,986,632	9,399,345	17,322,080
Typesetting machines	316,546	607,288	2,011,583	3,518,934
Typewriting machines	1,802,433	1,911,315	12,099,804	15,600,275
Windmills	107,538	464,134	709,948	2,187,993
Wood-working machinery, saw mill	97,096	144,972	479,218	1,011,571
All other	231,900	475,275	1,865,720	3,040,673
All other machinery and parts of	6,843,653	10,218,172	47,996,720	75,267,020
Total	\$32,159,283	\$43,831,440	\$238,574,280	\$340,968,784

are approximately the same, but from a point of volume the greatest falling off was in steel bars and plates. Exports of steel bars for February totaled 39,344 tons, while in January they amounted to 67,570 tons. Exports of plates in February were 66,191 tons as compared with 110,485 tons in January. Wire nails dropped from 8532 tons in January to 4129 in February, cast iron pipe from 10,100 tons to 8102, and welded pipe from 72,999 tons to 64,053. It is interesting to observe that exports of steel rails were about the same for both months, being 59,739 tons in January and 59,390 tons in February. Japan took the greatest amount of steel rail exports in February, 11,048 tons, and 42,979 tons for the eight months. Kwantung, leased territory, took 9846 tons and 25,275 tons, respectively; the Dominican Republic 4120 and 73,641 tons, respectively, and Brazil 2062 and 41,509 tons, respectively. Canada was the chief buyer of galvanized sheet and plate exports, taking 2992 tons in February and 19,982 tons for the eight-month period. Canada also was the largest buyer of plates, taking 21,206 tons in February, and 756,203 tons for the eight-month period, with the United Kingdom coming next, with 9109 tons and 136,219 tons, respectively. To Canada also went the largest exports in February of sheets and structural steel, taking 5613 and 10,620 tons, respectively, while for the eight-month period the tonnages were 48,214 and 102,399 tons. Mexico was the principal country of export for welded pipe, taking 27,262 tons in February and 126,241 for the eight-month period.

The Milwaukee Harvester Works of the International Harvester Co., at Sixteenth and Park streets, have been ordered to suspend operations March 31 for an indefinite period, pending the disposition of accumulated stocks of finished goods, principally gas engines, tractors and cream separators. The Milwaukee works normally employed 4500 operatives. In recent months the number was reduced to 2750.

## Former Controller Williams Again Writes to Judge Gary

John Skelton Williams, former Controller of the Currency, has written another letter to Judge Gary, chairman of the board of the United States Steel Corporation, regarding the profits of that company. Mr. Williams' chief attack was upon the declaration by Mr. Gary that it would have been "utopian" for the corporation to have charged less than the prices authorized by the Price Fixing Committee during the war.

Mr. Williams states that steel and iron products, from iron ore to structural steel, are being maintained at prices 100 per cent above the pre-war basis, while other metals, such as copper, lead, tin, etc., have returned to a pre-war basis or lower.

Declaring that the present condition of the railroads is partly attributable to "the enormously inflated prices which they have been required to pay, and are still being required to pay, for their supplies, principally products of steel and iron," Mr. Williams says the roads now pay about \$3,000 for steel freight cars which formerly cost them about \$1,000. He says that the credit of the roads has declined with their reduced net earnings, "so that they are now forced to pay for the funds needed to buy a freight car about 8 per cent interest or more on \$3,000, or, say, \$250 per year, as compared with 5 per cent on \$1,000, or \$50 a year, before the war, an increase in interest cost for freight cars of 500 per cent."

In answer to Judge Gary's defense that the Steel Corporation charged only the maximum prices authorized by the Federal Price Fixing Committee, Mr. Williams says:

"Your position seems to be that because the Government fixed maximum prices you were compelled to charge them, regardless of how gross and excessive your profits might be. There was no such compulsion. You were free to forego profit entirely or to reduce it to a really 'reasonable' rate. You could have done this without crushing weaker competitors. There was then plenty of market for all.

"The Government fixed the maximum prices high because there was need for more material than the United States Steel Corporation could supply and consequent necessity for encouraging smaller producers. It did not require anybody to exact the maximum rates. Your legal right to exact those rates was unquestionable. The ethical right is another matter and for your corporation to judge."

## Iowa Legislature Acts on Basing Point Resolution

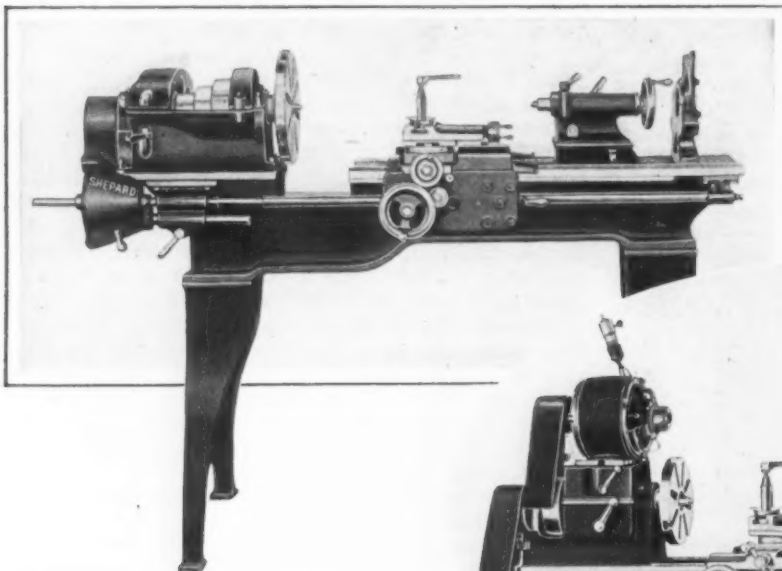
In a resolution passed by the Iowa House of Representatives and Senate, the Federal Trade Commission is urged to issue a complaint in the case now pending before it attacking the practice of quoting rolled steel products f.o.b. Pittsburgh. A similar resolution will come to a vote in the Wisconsin Legislature this week, and in Minnesota a resolution was adopted two weeks ago, as reported in THE IRON AGE of March 17. The campaign against the Pittsburgh basing point was initiated by the Western Association of Rolled Steel Consumers, which was formed on Jan. 24, 1919, with a membership of 40. The organization now has 765 members in 24 States. Among other associations which are now using their influence in behalf of the abolition of the Pittsburgh base is the American Farm Bureau Federation with 1,000,000 members from 767 counties in 34 States.

A report on the work of the American Engineering Standards Committee which is working for the unification of the more important standards and for overcoming the confusion that was being produced by the numerous organizations (more than 100) that hitherto published engineering standards without systematic co-operation among themselves will shortly be available for distribution. Copies may be obtained by addressing a request to Dr. P. G. Agnew, secretary, 29 West Thirty-ninth Street, New York.

## New Lathes Added to the Shepard Line

The Shepard Lathe Co., Rising Sun, Ind., formerly of Indianapolis, has recently made additions to each of its two lines of lathes, the Sterling and the New Shepard.

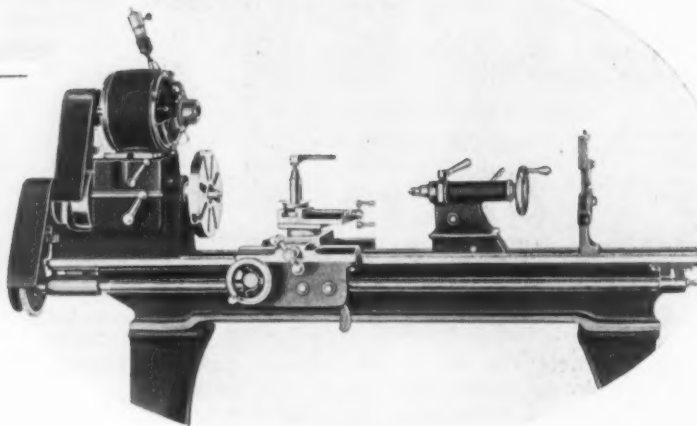
The Sterling lathe is now also furnished with a complete inclosed geared head, single pulley drive, driven by means of a single-pulley countershaft, by foot power or by a small electric motor mounted on the headstock. The motor is designed to take its current from a lighting circuit. This lathe is also furnished with plain or gap bed, standard or bench legs. It is said to be especially adapted for use in repair shops, experimental work, garages and light manufacturing.



The Gap Bed of the New Shepard Lathe Increases the Swing to 19 in. The Sterling lathe, shown below, is furnished with motor, countershaft or foot power drive

No belts to shift and no shifting gears to break are pointed out as features of this design.

The New Shepard 12-in. lathe is now also furnished with a gap bed and bridge, increasing the swing to 19 in. for a length of 5 in. in front of the face plate. The bed is reinforced at the gap and the carriage is arranged to overrun the gap without letting down. The Shepard 12-in. lathe was described in the June 27, 1918, issue of THE IRON AGE, page 1667.



## Cuban and Mexican Tool Markets

A representative of an American machine tool manufacturer, on the basis of a visit to Cuba and Mexico, describes business conditions in those countries as follows:

In Cuba nearly every importer of machine tools overbought considerably, and with the Cuban sugar crisis coming on, they were unable to deliver anything like a normal amount of equipment, and consequently there are several hundred thousand dollars' worth of machine tools in the warehouses of the machine tool importers and very little hope of moving any of it for some time to come.

While many of the firms are substantial, they are unable to pay for such equipment as they are receiving, and it has been necessary to extend the date of payment from time to time. It will likely be one to two years before they are able to take care of their obligations in full, and it will likely be two years before any considerable amount of machine tools will be imported, as the stocks they have on hand are sufficient to take care of normal requirements for at least this length of time.

In Mexico City, while missionary work at this time is not altogether lost, the fact is importers of machinery are not in a receptive mood. There is very little money in Mexico, and it is difficult to borrow. Such banks as will lend are charging 1½ to 2 per cent per month with the very best of security. The price of silver is low, and practically all of the mines are closed

down. The railroads are in a deplorable condition as far as rolling stock is concerned, as a very large portion of the freight they move over the Mexican lines is moved by privately owned equipment, and privately owned locomotives, and at a very high freight rate and with much delay.

The dock situation in Vera Cruz, which was very much congested on account of the stevedore strike, has improved slightly, but the railroad conditions between Vera Cruz and Mexico have made it difficult to get goods into Mexico City, and as a consequence it will be several months before the docks will be cleared of merchandise.

Primarily, Mexico must have the investment of outside capital to develop her resources, but until the

government in Mexico is recognized by the United States, foreign capital is going to be backward in considering that country. Incidentally, German firms are flooding Mexico with catalogues and prices and undoubtedly will claim a good share of the business if the Americans do not act in some concert, as a nation or otherwise.

## Reliance Wheel Co. Expansion

Plans for enlargement of its capacity are being developed by the Reliance Wheel Co., Youngstown, Ohio, manufacturer of a pressed steel disc wheel for commercial and passenger cars. Joseph M. Crenan, director of sales, announces that numerous inquiries are being received for the company's products, both from individuals and from motor car manufacturers. Norton H. Van Sicklen of Chicago and Elgin, Ill., formerly president of the Van Sicklen Speedometer Co., which sold its property and business to the Stewart-Warner Speedometer Corporation, was recently in consultation with directors of the Reliance company and is to be elected president and general manager.

A symposium on management is to be held by the Metropolitan section of the American Society of Mechanical Engineers on Friday evening, April 1, at the Engineering Societies Building, New York. Prof. Dexter S. Kimball, dean of the Colleges of Engineering, Cornell University, will deliver a paper on "The Opportunity of the Engineer in Management"; C. E. Knoepfel, industrial engineer, New York, will read a paper on "Types of Industrial Organizations," and L. W. Wallace, secretary American Engineering Council and president of the Society of Industrial Engineers, is scheduled to address the meeting on "Unsolved Management Problems."



# Forecast of Tariff Policy of New Congress

Some Rates of Present Law May Be Retained—Moderate Protection Indicated by Chairman of Subcommittee on Metals

—BY L. W. MOFFETT—

WASHINGTON, March 29.—Rates on the heavier iron and steel products carried in the Underwood-Simmons tariff act will be continued in the permanent law in course of preparation by the House Committee on Ways and Means, according to the plans that now are in the mind of the subcommittee of metals.

This statement, which comes as a source of surprise, was made to THE IRON AGE in an authorized interview with Representative John Q. Tilson of Connecticut, chairman of the subcommittee on the metal schedule. The other members of the subcommittee are Representative Luther W. Mott of New York and Representative Charles B. Timberlake of Colorado. It is the opinion of the subcommittee, as expressed by Representative Tilson, that facts before that body do not indicate any particular need for an increase in tariff rates on the heavier iron and steel products, and consequently he believes it is the disposition of the subcommittee to stick to the rates in the existing Underwood-Simmons law more as a source of revenue than for protection. The subcommittee plainly is of the opinion that the iron and steel industry is so thoroughly built up and organized efficiently that it does not need added protection in the heavier lines.

## Policy as to Payne-Aldrich Law

The common impression has been that the Ways and Means Committee both as a whole and through its subcommittees would follow the Payne-Aldrich rates in a general way and that the Senate Finance Committee would do likewise, thus affording a tariff act largely along the lines of the Payne-Aldrich law. But the statement is made by Representative Tilson that the metals subcommittee is not following the Payne-Aldrich law closely because facts before it show that conditions have so changed that this would be unwise, but in some cases only slight changes have been made so far in the present law where it is considered that the Underwood-Simmons act has worked satisfactorily as a revenue tariff and where protection no longer is needed.

It is evident that while such material as semi-finished lines, plates, shapes, bars, sheets, and products of the heavier kind are, according to present plans, to receive no higher protection, or in the case of semi-finished lines without alloys where they are to remain on the free list, serious consideration with regard to fixing duties on other products is in contemplation. These relate to such minerals as chrome, manganese and tungsten ores, and their manufactures through the blast and electric furnaces, including ferrochrome, ferromanganese, and ferrotungsten. It is not certain that all of these, especially manganese ore, will be made dutiable, but the existing tendency is in that direction. Magnesite also, it is believed, may be made dutiable. In addition to these, the more highly finished lines, such as crucible and tool steels, cutlery and machine tools generally, are also being studied with the probability of being given further protection.

## Will Call Steel Men to Washington

The subcommittee has progressed considerably during the past week and already has arranged to call men of the trade before it in Washington to cross-examine them on testimony previously presented before the Ways and Means Committee, as well as on other subjects, but the time of hearing them has not

been set. It will be within a short while, however, inasmuch as the subcommittee hopes to complete the metal schedule by April 15, though there is no assurance that this can be done, Representative Tilson said.

President J. A. Matthews of the Crucible Steel Co. of America, Pittsburgh, who gave interesting testimony before the Ways and Means Committee, urging higher protection for the crucible steel industry, has been asked to appear before the subcommittee for cross-examination, and other steel men, including fabricators, have been asked to come to Washington for the same purpose. Among them will be a representative of the Illinois Steel Co., who perhaps will be asked not so much about the tariff itself as about the process of manufacture of heavier steel lines at Gary, Ind., and other technical information with which Mr. Tilson said the subcommittee wants to familiarize itself. Briefs also will be accepted by the subcommittee from the steel interests, and it has been pointed out that unless they are content with present tariff rates on the heavier lines, they will do well to submit briefs. Indeed, it has been even reported that in an instance or so products now on the dutiable are being considered for transfer to the free list, which would be an unprecedented move for a Republican administration. Doubt exists, however, that this will be done.

## Chairman Tilson's Statement

In his interview with THE IRON AGE, Representative Tilson said:

"I believe that there is no group of industries in the country that needs a protective tariff at this time more than the metal industries as a whole. I know from personal observation what the conditions are in my own State, Connecticut, and I feel that it is the duty of Congress to pass a law providing adequate protection at as early a date as possible. As far as the subcommittee on metals is concerned, I can say that we have already started work and will push it through just as quickly as possible, and my personal effort shall be to arrive at as scientific tariff rates as the facts before us will permit, providing adequate protection for those industries which we find are in need of it without pushing the rates up to a point which will make prices unduly high in this country.

"Our subcommittee has started work on the metal schedule methodically and we shall go through the various paragraphs one at a time, considering each in connection with the data collected by the Tariff Commission, the facts presented at the hearings before the Ways and Means Committee and the various briefs and memoranda which have been presented by persons specially interested. We are seeking all the information we can obtain in revising each paragraph, weighing it in connection with the reports of exports and imports during the past year, which give an important insight into the effect which the absence of a protective tariff has had on certain lines of industry, and giving due consideration to the opinions of the tariff experts which the Treasury Department placed at our disposal, seeking to arrive at fair and just rates which will be protective without being improperly high.

"We are not following the Payne-Aldrich law closely, as some persons have believed, for the facts we now have before us show that conditions have so changed that this would be unwise, but in some cases

have made but trifling changes in the present law, where it is apparent that the Underwood law has worked satisfactorily as a revenue tariff and where protection is no longer needed.

#### Information Will Be Welcomed

"The hearings on the tariff have been completed and the subcommittee has no facilities to hold further hearings, even if we had the time, but the subcommittee will be glad, of course, to receive information or facts which may be helpful in drafting this part of the tariff bill from those who are interested in these matters. From time to time we shall probably call in men who are experts in various lines of the metal industry for their advice and help. Our purpose, of course, will be to get the best possible information in this schedule.

"With reference to the heavier steel products, I might say that the facts before us have not shown that there is any particular need for an increase of tariff rates. In cases of this kind, I believe the disposition of the subcommittee will be to stick to the rates of the Underwood law, more as a means of obtaining a small amount of revenue than for protection. In classes of this kind, it may seem wise to leave the door open at least partly for whatever revenue can be obtained, when it is apparent that protection is not a necessity.

"It is becoming clearer and clearer, I think, that the tariff is fundamentally a labor question and that the need of protection is based primarily on the differences in labor costs here and in foreign countries. The manufacturer himself does not need a protective tariff as much as the man who works for him does. If we are to keep up the standard of wages in the United States, we must prevent the flooding of our markets with articles made in countries where the standard of wages is so much lower than our own."

#### Members Change Position

The belief that the new Congress would largely restore Payne-Aldrich rates was unquestionably well-founded, but leading members of Congress who are facing the usual dilemmas that arise in connection with tariff making have changed their positions somewhat and have come to the belief that high duties should be avoided where possible.

The attitude of the subcommittee on the metal schedule as stated by Mr. Tilson nevertheless is a cause of surprise because it was thought it would greatly change the existing metal schedule by increasing rates, if not to the Payne-Aldrich level, at least to a somewhat higher level, and that numerous products now on the free list would be made dutiable. While the latter probably will be done in the instances previously cited, it does not promise to be done extensively. The so-called war minerals, such as manganese, chrome, and tungsten ore, together with magnesite, however, promise to be given protection, with the possible exception of manganese ore, and as an indication of what may be done, it is said that the subcommittee may favor the same duty on tungsten ore and ferrotungsten as carried in the bill introduced by Representative Timberlake and passed by the House February, 1920, providing a duty of \$10 per unit of tungstic trioxide, a unit being defined as 1 per cent of a short ton, or 20 lb. of tungstic trioxide. This measure also carried a duty of \$1 per pound of tungsten on metallic tungsten, tungsten powder, ferrotungsten, and other materials containing tungsten, including high speed tungsten and all alloy steels containing tungsten. The Senate Finance Committee reported the bill out with modifications, but it never passed the Senate. It lowered the duty on tungsten bearing ores to \$9 per unit, and placed a duty of 1 cent per pound on ferrotungsten and the other products named, and at the same time lifted high speed tung-

sten steel and all alloy steels containing tungsten from the general paragraph in the House bill and assessed a duty of 35 per cent ad valorem.

#### Little Interest Shown

Perhaps one reason why the subcommittee is considering the idea of maintaining Underwood-Simmons rates on the heavier steel products is the comparatively small interest shown by the iron and steel producers in the tariff hearings. That the proposal of the subcommittee may awaken their interest has been indicated, and it may be heightened by the fact that Belgian billets, as an instance, are being offered at Portland, Maine, at \$28, delivered, showing the possibilities of resumption of foreign competition.

It is apparent, however, that protection from unfair competition through dumping is being kept well in mind through proposed anti-dumping legislation and the fixing of duties on a basis of American valuation, established on the American market value, legislation for which is to be taken up, in the order named, after the enactment of the emergency tariff act, the permanent tariff act being last. Final passage of the permanent law will require considerable time, but it is hoped to introduce it in the House either during the latter part of April or early in May, and to have it on the statutes within six months' time or less. Necessarily the time required is largely a matter of surmise only.

#### Valuation Plan Explained

Considerable misunderstanding exists as to the operation of the proposed American valuation plan, which would have the effect of raising duties, and because of that fact the following extract of the suggested plan by Hon. Marion De Vries, associate judge of the United States Court of Customs Appeals, submitted last Friday before the Ways and Means Committee at the request of Chairman Fordney, is presented:

After determining the American market value, in order to properly find and establish the basis upon which duties are to be calculated upon imported goods, we should without doubt deduct actual duties levied by our laws upon the imported goods; otherwise we require duties to be paid upon duties, and *would be adding to the American value* to the extent of such duties which would possibly eventuate an embargo. That this suggested deduction may not be misinterpreted illustration is ventured. Assuming the market value of a bushel of corn in the principal markets of the United States to be \$1 and the duty 25 per cent, what would be the proper deduction? Not, of course, 25 per cent of \$1, for that would be *adding* the duty to the American value, effecting possibly the suggested embargo, but the deduction would be 25 per cent upon the dutiable value fixed by, and after, the stated deduction *from* the American value. The solution is mathematical. Proceeding with the *known* to discover the *unknown* quantity by adopting \$1 as a basis, we add \$0.25 to \$1, equals \$1.25, which divided into \$1 equals \$0.80, the unknown and sought dutiable value. Proof: Twenty-five per cent duty upon \$0.80 valuation equals 20 cents duty, which added to \$0.80 equals \$1 American market value. In this case, therefore, where the American market value is found to be \$1, the import dutiable basis would be \$0.80.

Whether or not further deductions should be made in the establishment of the dutiable value is a matter for the Congress to determine. There is offered here a legislative principle in draft form. Deductions would and can be effectively made by continuing their enumeration after the words "deducting therefrom United States import duties."

Undoubtedly the most valuable term of this law, to be preserved as construed by the Supreme Court, is that of "the principal markets of the country." As thereby construed, that term is not only peculiarly and completely applicable to the new scheme of valuation, but highly instructive as to the here desirable verbal amplitude.

#### Personnel of Committee

Because they are in charge of the metal schedule, the iron and steel trade undoubtedly will be interested in sketches of Representatives Tilson, Mott and Timberlake.

Representative Tilson has been interested in manu-



Hon. Luther W. Mott

Hon. J. Q. Tilson, *Chairman*

Hon. C. B. Timberlake

### Members of Subcommittee on Metals of Ways and Means Committee of House of Representatives

facturing problems for many years and particularly with reference to production of ordnance materials. He is considered an expert on this subject and showed a remarkable technical knowledge of it while a member of the House Committee on Military Affairs. Before the United States entered the European war, Mr. Tilson made urgent request for appropriations for the manufacture of tools, jigs, dies, gages, etc., in order that the Government would be prepared for mass production of ammunition, rifles, etc., the plan being to have these tools not only in Government arsenals but in private plants as well. Had his proposal been accepted at the outset instead of being disregarded, the United States army would have been equipped much more quickly with rifles as well as other military arms and ammunition, and of the Government's own design, than it was with the foreign models and equipment, including machine guns. Although not a manufacturer, Mr. Tilson by reason of his connections as a law-

yer before entering Congress and his study of this subject during his 10 years' service in Washington, is considered to have a good grasp on the problems of the manufacturing interests of the United States. Mr. Tilson, who is 55 years of age, saw service during the Spanish-American war, being second lieutenant of the Sixth United States Volunteer Infantry and also served on the Mexican border in 1916.

Mr. Mott is from Oswego, N. Y., and in 1910 and 1911 was president of the New York State Bankers' Association. He has had no manufacturing experience. He has served 10 years in Congress.

Mr. Timberlake has served eight years in Congress, and while he has not had manufacturing experience, he has studied the production, costs and uses of minerals that are found in the Western country, such as the different ores used in making alloy steel, and has given much attention to the matter of protecting the industry engaged in mining them.

## Conditions of Railroads are Critical

### Drastic Retrenchment Found Necessary—Three Possible Outcomes of Controversy as to National Boards

CHICAGO, March 26.—With their revenues so diminished that they are unable to earn operating expenses, the railroads have undertaken drastic measures of retrenchment. Blocked in their efforts to reduce wages and to change working conditions, the carriers have had but one course left to them, namely, the curtailment of their working forces. Wherever an employee can be dispensed with without actually interfering with the operation of trains, he is being laid off. Railroad shops are fast being closed. Within the past few days the Delaware & Hudson has discontinued operations in its Colonies shops near Albany, N. Y., and this action will soon be followed by the closing of the Green Island, N. Y., and Oneonta shops of the same road. The New York Central shops at West Albany have been shut down. These instances are typical of what is happening all over the country. As a result, necessary maintenance and repair work is being postponed indefinitely. It is estimated on good authority that 10 per cent of the entire freight equipment of American railroads is now in bad order, and this proportion is steadily being increased. When a car gets in bad repair, the railroad switches it on a siding, where it will remain until reduction in labor costs justifies its renovation.

This situation, in the opinion of close observers of the railroads, forebodes the most paralyzing tieup of transportation the country has ever known when railroad traffic again assumes normal proportions. Railroad executives are not blind to what is ahead of them, notwithstanding the large car surplus now existing in a time of abnormally light traffic. Yet when industrial companies are pursuing a policy of retrenchment, cutting wages and reducing operations and sometimes closing their plants altogether, the carriers are forced to continue operations under the burden of wages and working conditions which are the legacy of Government control. There are three steps which, according to railroad officers, must be taken before operating costs can be reduced to a point where the carriers can show a profit: first, the abrogation of national agreements; second, the reduction of the wages of unskilled labor; third, the reduction of skilled labor rates.

#### National Agreements

The matter of national agreements is now being argued before the Railroad Labor Board at Chicago. There are three possible outcomes of this hearing: first, the complete abrogation of the agreements, as sought by the railroads; second, the continuance of



the agreements in effect, for which railroad labor is arguing; and third, a compromise settlement which would embody the retention of certain rules which the board considered fundamental and the remanding of the working out of other regulations to the railroads and their employees.

The carriers regard the national agreements as objectionable because they ignore differences in local conditions and place a premium on slack work. Rates of pay for different classes of labor are identical in all parts of the country, despite wide differences in living costs and local conditions. Train service employees in mountain territories, for example, were formerly paid a differential above like employees in other territories to induce men to undergo the more difficult conditions of operation in rugged countries. Under the national agreements, differences of this character have been abolished. The worst abuse of present rules is the

large rates paid for overtime. If, for instance, a shopman is held after his regular eight-hour assignment to complete a job in 1 hr. and 15 min., he receives pay for 6½ hr. for his overtime work. Under former practice the employee would have received pay for 1 hr. and 52 min., instead of 6½ hr. The national agreements also carefully define the work which each craftsman is authorized to do. Thus in order to change a nozzle tip in the front end of a locomotive, it is necessary to call a boilermaker and his helper to open the door, because that is boilermakers' work; to call a pipe man and his helper to remove the blower pipe, because that is pipemen's work; and to call a machinist and his helper to remove the tip, because that is machinists' work; also for the same force to be employed in putting on the new tip. Before federal control a machinist helper or a handy man could put in the nozzle tip alone.

## SAFE PRICE POLICY

### Youngstown Mills Are Conservative—Improvement Comes Slowly

YOUNGSTOWN, OHIO, March 29.—A conspicuous feature of the iron and steel market, as far as Mahoning and Shenango Valley producers are concerned, is the evident intention of makers to follow a safe price policy, which is in marked contrast to the recent price cutting that resulted in loss on production of the tonnage involved. This is particularly true of plates and sheets, which were chiefly affected by the policy of underbidding, to obtain what tonnage was in the market. Plates have firmed to 2.25c. on attractive specifications, though some interests are nominally quoting 2.40c. Sale by a steel-works interest in the Mahoning Valley of 1000 tons of standard basic pig iron to the Sharon Steel Hoop Co. at \$23 is in harmony with the announcement of the rate of 1000 tons at that figure made in THE IRON AGE last week. Additional sales at \$23 or less are expected in view of the accumulations of iron at steel makers' plants, especially in cases where finished production has been largely curtailed. Lower pig iron costs, if more or less permanent, may again affect the whole range of finished prices, though producers are now inclined to be cautious in their quotations.

Since the action of certain of the major independents in deciding to eliminate prices which involved a loss, there has been a slight improvement in new business. Buyers, of course, are still hesitant, not yet certain that definite price policies have been established. The major independent groups in the Valleys, however, have made their position clear that they regard absence of operations as better than sales at prevailing prices, which mean an actual operating loss. The limitations upon such procedure, early foreseen, were realized in some cases sooner than expected. Sheets, wire products, tin plate and strip steel are in the best position in the Valley, with a variety of small orders coming out.

#### Slight Increase in Operations

Current operating rate is an index of the betterment, which is still, however, painfully slow. Average operations for the week are at one-third of capacity. The Niles Forge & Mfg. Co. is working off an order for 350 tons of structural steel for a new high school at Youngstown. A fabricating interest reports that new business is at the rate of 75 per cent of capacity. Decline in tubular goods buying is indicated by the fact that only four of the 17 pipe furnaces in the Valley are active.

Blast furnace schedules continue inactive, with but seven of 25 stacks in the Mahoning Valley pouring.

After an idleness of several weeks in its finishing departments, the Brier Hill Steel Co. has started four open-hearth furnaces and 10 sheet mills.

Sheet mill operation this week is the best in nearly two months, with 47 of 105 units active, compared with 33 the week before. In all cases, managers report that

the new business is represented by small tonnages, comprising chiefly 100 to 300-ton lots. On galvanized, 5c. a lb. is still being quoted on very attractive business, though the ruling price is 5.20c. Black sheets are obtainable at 4c., though some interests will not quote lower than 4.20c. on the general run of business. Blue annealed averages around 3.20c.

Due to the suspension this week of the open-hearth department of the Republic Iron & Steel Co. and the operation of the Bessemer department instead, the rate of independent open-hearth operation is slightly less than the week before. Fifteen units are charged as compared with 17 last week.

High-speed tool steel buying, which has shown increased volume lately, is at prices but slightly under those prevailing when this market was at its peak. Makers state the inquiries indicate efforts for economies which are being attempted. Consumers in many cases are disregarding initial costs to secure equipment that will minimize machine shop work and replacement charges.

#### Quick Delivery Demanded

One feature of the market is the dispatch which buyers are demanding for material, when tonnage is actually placed. In some instances, it has been necessary to start production on a few hours' notice to meet delivery requirements.

Improvement in wire product buying applies both to plain and barbed fence wire and nails. Tonnages of fence wire for shipment to South America have been placed in the Valley within the past two weeks. The leading district producer recently refused to go below the 3c. base on wire when the consumer stated that this price was too high.

Tinplate is firm at \$7 per base box, with district operations at the rate of 60 per cent. Automobile companies are sending in additional specifications for strip steel. There has been a tendency for hot strip to advance from the recent levels of 2.80c., while cold strip is moving at 5.25c. This is fully \$20 a ton below the Steel Corporation base, and only those makers with the most economical methods of production are enabled to remain in the market.

Steel bar production has been resumed in the Valley on a larger scale than at any time in the past two months, due to the accumulation of many small orders. The price is firm at 2.10c.

Open-hearth sheet bars have sagged to \$38.50, nominally, and consumers say that tonnage is available at \$35.

Inasmuch as most scrap consumers are not only self-contained for the present, but have large stocks on hand, there is little or no movement at this time. Dealers, too, who have been receiving scrap regularly from the usual sources, are well stocked. Heavy melting is quotable at \$13.

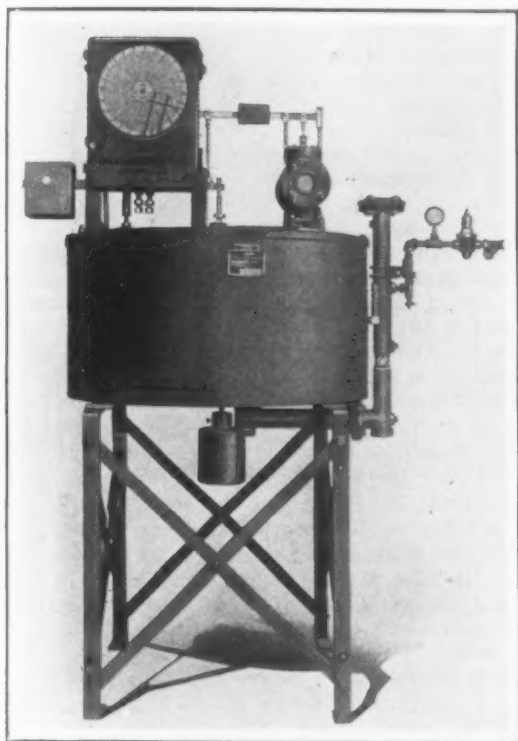
Indicating the limited demand, spelter has sagged to 4.70c., after gaining to 4.85c. Coal and coke prices continue at nominal low levels. Steam coal is quoted at \$1.85 to \$2 mine, while by-product coal is 75c. higher. Spot furnace coke ranges from \$4 to \$4.75, Connellsville oven.

## Automatic Regulation of Producer Gas

The automatic control of steam blower pressures in gas producers to the end of providing uniform gas pressure to furnaces is the function of the Chowning regulator, manufactured by the Chowning Regulator Corporation, Corning, N. Y. It is said to maintain a supply of gas to the furnace not exceeding 0.1 in. of water column variation.

The regulator consists of a sheet steel, oil tight container inclosing a floating diaphragm which through a pair of connecting levers actuates the balanced piston valve controlling the steam admitted to the blowers. The space beneath the diaphragm and pipe connecting it to the gas main contains compressed air at all times. Fluctuation of gas pressure in the main reacts on the air cushion causing the diaphragm to raise or lower with corresponding action of the steam valve.

A feature that contributes largely to the successful



An Accelerating Attachment Is Provided for Increased Sensitiveness of Control

operation of the regulator is the provision made for keeping the pipe connection between the regulator and the gas main clean. In this arrangement a small quantity of compressed air flows continuously into the gas main through the connecting pipe.

Recorders of the chart type are provided and afford a permanent record of the gas main pressure in inches of water and the steam blower pressure in pounds. The recorders are designed to enable operators to know exact conditions at any and all times and to serve the executive in charge as a check on both his operatives and the operation.

An accelerating attachment is furnished if desired to give the regulator greater sensitiveness and quicker response to sudden changes in gas main pressures when unusual ranges of furnace gas are required and also for use with certain types of furnace gas reversing valves. An electric controller can also be supplied for use in plants where the cycle of operations demands shutting down of producers intermittently.

Regulators of this type have been applied successfully to producers furnishing gas to open-hearth and heating furnaces, soaking pits, crucible furnaces and pipe welding and bending furnaces. They are also adaptable to use in the glass and ceramic industries and it is claimed that in all uses they effect a saving of coal and steam, as well as providing a sensitive control of gas pressure that reacts to the advantage of increased efficiency in the heating processes.

## Improved Electric Rivet Heater

A rivet heater which incorporates improvements over its previous designs has been recently developed by the General Electric Co., Schenectady, N. Y. It is constructed to provide entire safety and is adaptable for both intermittent and steady operation.

The heater consists of an air-cooled transformer, with a single turn short circuited secondary, in which the rivets to be heated form a part of the secondary circuit. The primary winding is designed for operation on 220, 440 or 550 volts, single phase circuits of 40, 50 or 60 cycles. Taps are brought out from the primary winding to a drum controller, so that six different voltages can be obtained on the secondary. This makes adjustment for various sizes of rivets or rates of heating simply a matter of setting the handle on the drum controller.

The secondary coil is divided into two upper electrodes moved by pedals, and a cold rolled copper electrode block directly under them. The two rivets to be heated are placed on the lower block, and the movable electrodes lowered on them, thus completing the circuit. Since the resistance of the rivets varies from six to fifty times that of the copper, according to temperature, most of the electrical energy in the secondary is dissipated in the form of heat in the rivets.

The heater is provided with a switch which operates to disconnect one side of the primary from the line, in cases where the demand for rivets is intermittent. The switch is opened by means of a lever convenient to the left hand of the operator.

The approximate time to heat one clean rivet is given as 16 sec. for those of  $\frac{1}{4} \times 1$  in. in size and 190 sec. for those  $1\frac{1}{4} \times 5$  in. If the rivets are covered with rust or scale or if the electrode block is dirty



Electric Rivet Heater Adaptable for Both Intermittent and Steady Operation

heating will be somewhat slower. Two rivets are heated at one time.

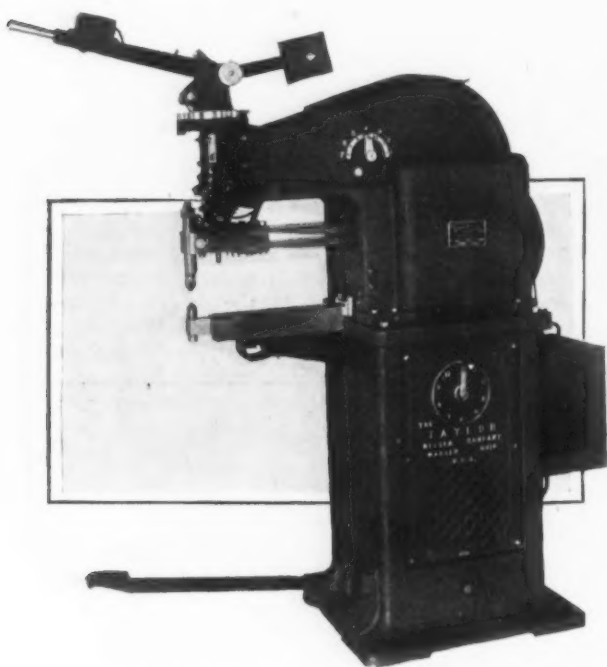
The heater requires 15 kw. at 90 per cent power factor continuously. The input can be increased to 17.5 kw. for two hours or 20 kw. for one hour without exceeding the rated temperature rise of 55 deg. C. It weighs about 600 lb. and is provided with a bail for lifting, or if desired, wheels, so that it can be rolled from place to place. A description of the previous design of General Electric rivet heater appeared in THE IRON AGE, Jan. 15, 1920.

The new design has increased safety features as well as having greater flexibility of control.

### Spot Welder for Heavy Stock

The new type series 4 spot welder being brought out by the Taylor Welder Co., Warren, Ohio, is for welding material like sheet steel 1/64 in. to 3/4 in. thick (No. 28 to No. 3 gage). The head on this type machine has square slides and steel caps instead of the round spindle formerly used. Looseness due to wear may be taken up by removing shims from under the caps.

The hand lever will swivel 90 deg. from each side of center and can be locked in any position. When changing from hand lever to treadle operation, it is not necessary to make any disconnections. When operating by foot, the hand lever remains in the upper position. The height of the hand lever can be changed to suit the operator and the travel of hand lever and foot treadle can be regulated to seven different positions by means of a lever on the overhanging arm, shown in the illustration. The foot treadle swivels to right or left and can be removed when not in use with-



The Travel of Hand Lever and Foot Treadle Can Be Regulated to Seven Different Positions by the Lever Shown on the Side of the Overhanging Arm

out making any disconnections. Pressure on the work may be changed by an adjusting screw located in the center of the upper electrode holder. Changing from automatic to semi-automatic switch is accomplished by moving a small lever on the front of the head. Water circulates through the upper and lower welding electrodes.

The electrical features include a 33 k.v.a. transformer on the three smaller sizes and a 47 k.v.a. transformer on the two larger sizes. The voltages and frequencies generally used are 220 or 440 volts, and 25 to 60 cycles, with single phase alternating current. A ten-step self-contained regulator is included for adjusting current, and automatic and non-automatic auxiliary switches operate a magnetic controlled switch on the rear of the machine.

The distance between the lower horn and the copper bands when closed is 6 in. on the regular machine. On slide horn machines with horn at top of slide, the distance is 6 in. and with the horn at bottom, 26 in. The distance from floor to the welding electrodes is 42 in. The greatest movement of the upper electrode is given as 3 in.

The operation of this machine is by hand lever and foot treadle, together or separately. When using the automatic switch the electrodes are brought in contact with the work under spring pressure, further movement of the hand lever or foot treadle turning on the current, the work heating to a welding temperature.

Continued movement of the lever or the treadle turns off the current and applies a positive pressure to the molten metal, completing the weld. The non-automatic switch is operated by a button in the end of the hand lever.

The electrodes are brought into contact with the work under positive pressure, permitting the operator to apply heavy pressure before and after the current is turned on and off. Additional pressure may also be applied with the foot treadle.

### Atmospheric Conditions and Blast Furnace Operations

The theoretical effect of the temperature, pressure and humidity of the atmosphere on blast furnace operations is determined from data obtained from maximum and minimum readings at a meteorological station at Essen, Germany, according to an article in *Stahl und Eisen*, Oct. 21, 1920, abstracted by *Technical Review*, London. The shape of the diagram for the weight per cubic meter of air agrees, as a maximum, with the annual rate for the air-pressure. The graphs of the working results of a Rheinisch blast furnace show that, when the blast yield remains constant, the lowest blast pressure and the maximum production are obtained in the month of May. The coke consumption is not affected by variations in atmospheric humidity, but varies practically inversely to the ore yield. New points of view are opened up by these observations as to the control of the furnaces (ozone of the air, etc.). The question whether regulating the blast according to the weight of the air or blowing after compressing the air give the best effect on production, is left for further practical experiments to decide.

### Ore Rates Denounced

WASHINGTON, March 29.—Attorney Examiner C. M. Bardwell has made a report to the Interstate Commerce Commission holding that existing rates on iron ore from ranges in Wisconsin and Michigan to Granite City, Ill., are unreasonable. He prescribes a maximum of \$3.25 per gross ton from Hurley and Florence, Wis.; Iron River, Iron Mountain and Ironwood, Mich., and common points, and a rate of \$2.35 from Baraboo, Wis. The present rates are \$4.05 and \$2.835 respectively, which went into effect when the general 35 per cent advance became operative on Aug. 26 of last year. The report of the examiner, which is only tentative, says that traffic officials of the Wabash and Chicago & Alton, delivering lines to the plant of the complainant, St. Louis Coke & Chemical Co., admitted that the present rates were unreasonable in that they had been increased out of proportion to the increases to the Eastern blast furnaces, no advance having been made in the rates on iron ore from the ranges to the upper lake ports. The movement to Granite City is all-rail. The report recommends reparation based on the difference between the prevailing rates and those suggested.

### Industrial Cost Association, New York Section

At a reorganization meeting of the New York section of the Industrial Cost Association, held March 25, at the Engineering Societies Building, New York, H. S. Peck, comptroller S. K. F. Industries, was elected chairman in place of M. M. Moore, New York manager Mesta Machine Co., resigned. The following directors were elected: W. L. Dorsey, Sperry Gyroscope Co.; F. C. Poag, New Jersey Zinc Co.; C. M. Finney, Worthington Pump & Machine Corporation, and F. W. Kennedy, International Trade Press. F. K. Roberts, assistant comptroller S. K. F. Industries, 165 Broadway, will continue secretary and treasurer pro tem. By-laws were adopted and plans discussed for extending membership.

A. A. Alles, Jr., secretary-treasurer of the national organization, addressed the meeting, outlining the progress of the Pittsburgh, Detroit and Chicago sections.



## NEW PRECISION TOOLS

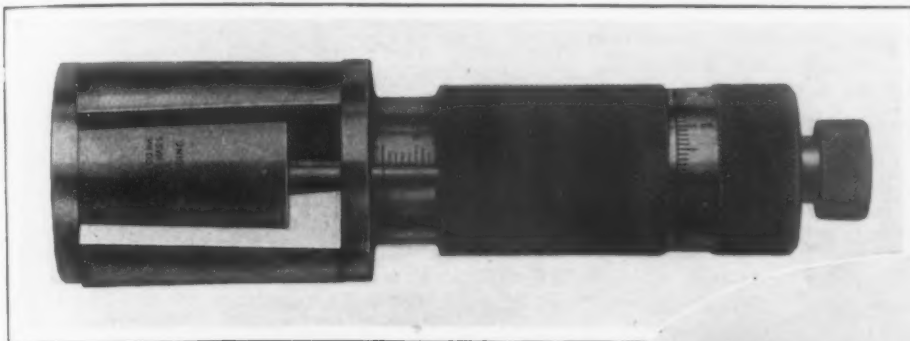
### One Notable Development, an Internal Micrometer for Indicating Size Within 0.0001 In.

The problem of measuring the size of a hole—a problem commonly arising in duplicating machine parts—has been baffling in comparison with that of measuring a shaft. Marked success in the solution is now broadly accorded to John Bath & Co., Inc., Worcester, Mass., and the following account is devoted to the Bath internal micrometer and master ring gages put on the market by this company.

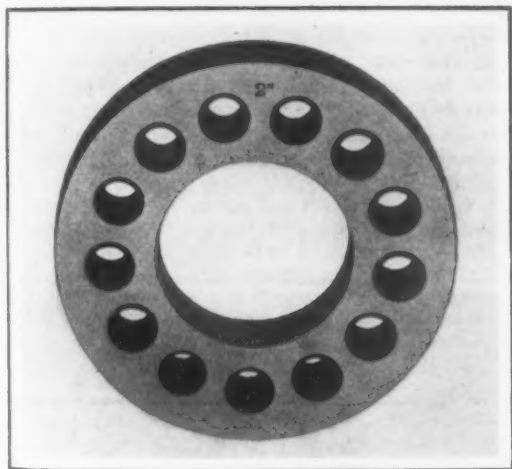
The fundamental features of the Bath internal micrometer, shown in the accompanying reproductions of photographs, include, first, the use of four measuring

so-called feel, which gives rise to variations in measurements by two individuals. The member carrying the measuring jaws having lateral motion, causes the jaws to move on their inclined supports; thereby a lateral movement of 0.005 in. increases or decreases the effective diameter only 0.001 in.

The micrometer head has ten main graduations which are about  $\frac{1}{2}$  in. apart and represent thousandths of an inch. These main graduations are in turn divided into ten sub-divisions which represent ten thousandths of an inch. An additional scale is provided on the shank of the handle, consisting of seven graduations, each of which corresponds to a complete turn of the micrometer head, or a measurement of one hundredth of an inch, and indicate the amount of over-size or under-size of the reading taken. On the handle end of the micrometer there is provided a knurled



The View of the Internal Micrometer Shows It Set for Its Maximum Size, This Being 0.0020 in. Above Size—a 2-in. Gage—with the Zero Matching Zero on the Dial. The detail in the oval shows the serrated edges provided for taking care of wear; the zero is matched on the graduated dial after the plug has been set to size by the ring gage.



One of the Developments of the Company Is the Narrow Ring Gage Emphasized for Its Maximum Rigidity, and Yet Minimum Weight. These precision instruments, intended for production work, are made by John Bath & Co., Inc., and patents are pending.

jaws having a line contact with the internal cylindrical surface to be measured; and, second, the application of a micrometer screw which controls and records the position of the measuring jaws as they are moved in or out on inclined supporting surfaces.

The four measuring jaws, which are provided with true cylindrical contact surfaces, are supported and held in perfect alinement by means of close fitting dovetail slots. A longitudinal movement of the measuring jaws, along the tapering or inclined supports, of 0.005 in., increases or decreases the diameter of the measuring jaws one 0.001 in. Since the longitudinal movement is recorded by means of a micrometer screw "of exceptional accuracy and refinement of fit," as Mr. Bath puts it, it is apparent that his micrometer is susceptible of remarkably accurate measurements.

The movable jaws being a close tight fit, without shake, in the dovetail holding grooves, and being controlled by a micrometer screw without backlash, the result is an instrument which has the rigidity of a solid plug. Thus the jaws stop abruptly when they come in contact with the walls of the hole, owing to the fact that there is no give or springiness in the measuring instrument. The rigidity eliminates the springiness or



thumb screw which serves to clamp firmly the micrometer head and thus retain the setting or reading of the micrometer.

Of considerable importance is the device provided which compensates for wear. This consists of a series of serrations on the sleeve carrying the micrometer graduations, and a similar series of serrations on the knurled handle which is fastened to the micrometer screw. By moving the graduated, serrated sleeve one notch, an adjustment of one ten-thousandth of an inch is made, and it is evident that any amount of adjustment up to the capacity of the micrometer, 0.07 in., can be secured.

During the manufacture and final inspection the micrometer is referred by means of light wave measurements to standard reference gages certified by the National Bureau of Standards, to within a few millionths of an inch. Thus, it is pointed out, the micrometer is adjusted so that when set at zero the jaws will represent a true diameter within a possible limit of error, of plus or minus twenty-five millionths of an inch.

After being standardized by means of light waves the internal micrometer is in turn used to verify a master reference ring gage. This master reference ring gage is then preserved as a standard to which the internal micrometer may be instantly adjusted and reset to represent correct size at any time, as provided for by the adjusting device.

#### Master Reference Ring Gage

The design of the Bath master reference ring gage departs from the usual form of construction. The deep wall section provides rigidity. The series of concentric holes have little effect on the strength of the ring, but serve to reduce the weight materially; and, furthermore, to provide for air circulation which permits the ring to return more quickly to normal temperatures

after it has been heated or cooled. In standardizing the micrometer the jaws are merely expanded to come in contact with the internal surface of the ring and no sliding motion takes place and therefore there is little or no opportunity for wear to occur.

In the use of the micrometer special point is made that an unskilled operator can make internal measurements quickly and accurately. If there is any suspicion or indication that the hole is elliptical, that is, out of round, another measurement is made with the jaws in a different position, and the exact amount of error can easily be determined. Owing to the fact that the hole is not completely filled with metal, slight variations in roundness are at once apparent. Also, measurements can be made in different parts of a hole, that is, the diameter at the front, the diameter at the center, or the diameter at the rear of the hole.

Mr. Bath asserts that the best way of measuring the

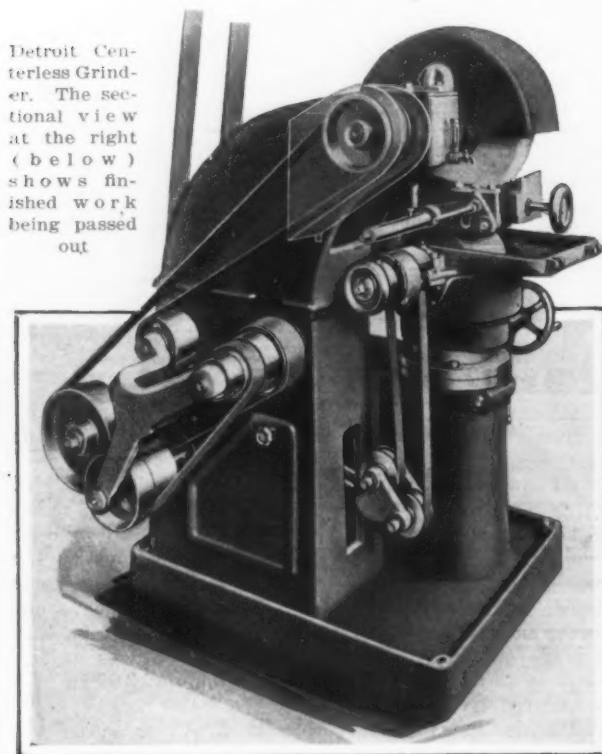
diameter of a ring gage or other lapped internal cylindrical surface is to have the surfaces of both the ring gage and the micrometer perfectly clean; washed with soap and water and then dried. Under these conditions the rotating of the plug in the hole at once shows in a very pronounced manner any errors that are present.

The jaws either stick on the surfaces of the hole or they move freely. In this way, he says, a difference of but a few millionths of an inch can be detected in the roundness of a lapped hole.

The internal micrometer is considered as essentially a production measuring tool. It is found no longer necessary to depend on "Go" and "Not Go" gages, which leaves the workman entirely in the dark as to the size of the hole until the hole is finished. "Go" and "Not Go" gages are an inspection facility, it is pointed out, rather than a production facility.

### Recent Development of Centerless Grinder

The Detroit Machine Tool Co., Detroit, is bringing out a new centerless grinder for straight cylindrical work which is an improvement over its previous design and which, it is stated, is expected to advance center-



Detroit Centerless Grinder. The sectional view at the right (below) shows finished work being passed out

less grinding to a place which it heretofore had not attained.

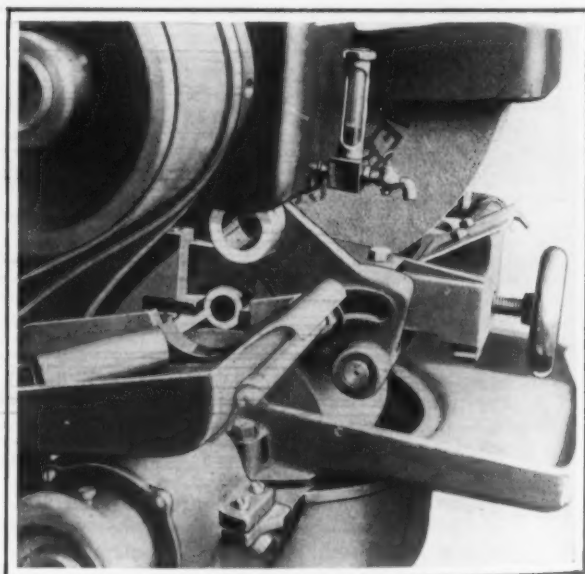
In the new machine, which is known as the No. 4 heavy duty centerless grinder, the work is rotated by laying it on top of a slowly revolving emery wheel. This driving wheel is swung around laterally on the round column which supports the wheel housing so that the lines of force on top of the wheel feed the work to move endways at the same time it is rotating. By changing this feed angle from zero to 6 deg., the work will move endways from zero to 100 in. per min. It is thus possible to set the wheel on an angle which will feed the work exactly the same as on any of the standard grinding machines on the market to-day.

The work is literally geared to the driving wheel and revolves between the driving and grinding wheels like a train of three spur gears. The pressure of the grinding wheel on the work as well as the weight of the work is said to result in positive, steady and even rotation at all times. The driving wheel is 8 in. long and the grinding wheel 4 in. wide, an arrangement which causes the work to rotate before it approaches

the grinding wheel and to continue to rotate after it has been ground. It is claimed that there is no danger of one piece feeding faster than the piece in front of it, which would cause a disturbance resulting in chatter marks.

Work which is less than 4 in. can be fed to the machine by arranging the pieces in a row in the feed trough or angle iron from which the work slides down to the driving wheel. This method of feeding keeps the pieces close together and permits the grinding wheel to work on its entire surface all of the time. The operator can place enough pieces in the trough to give him time to inspect finished work coming through at the other side. As the grinding wheel wears the lower wheel column can be raised or lowered without stopping the feeding or grinding of the work. Longer pieces are fed one after another and as they are finished a pan rolls them through an opening in the frame of the machine to an inclined floor so that they return to the operator's side.

Cuts from 0.0001 to 1/64 in. can be taken, depending on hardness of the material, and by speeding up rota-



tion of the work a high grade finish can be obtained. Roughing wheels can be mounted or taken off in short time. The wheel mounting is bored taper and each wheel has its own mounting. New wheels that have been trued, tested and balanced are kept in stock for replacing old ones. A special wheel truing device with or without diamond accompanies each machine, and is a part of the guide block mechanism.

The grinding wheel is driven by a 4-in. belt which is driven from the countershaft on the jack shaft at the rear of the machine. The jack shaft is bolted to a subplate which can be moved up or down to give proper

(Continued on page 878)

## SURPLUS STEEL

### War Department Will Sell Soon—Shipping Board Will Await Advance in Prices

WASHINGTON, March 29.—Plans for disposal of approximately 400,000 tons of surplus steel held by the Shipping Board, War and Navy Departments were discussed at a conference here this morning with representatives of steel companies. This was the first attempt on the part of the Government departments to solve the problem through co-operation and centralization, but it developed that the War Department found itself unable to work with other departments in the disposal of the surplus property because of its different position. The steel to be disposed of through plans in mind consequently is that held by the Shipping Board, constituting about 300,000 tons, and 20,000 tons held by the Navy. The Navy steel consists chiefly of forging billets. The Shipping Board steel includes 158,000 tons of fabricated material, about 12,000 tons assembled, 25,000 tons of plates, 30,000 tons of shapes, 9000 tons of scrap, and the remainder ship steel which has not been completely inventoried.

The conference, which was presided over by Capt. E. W. Bonnaffon, director of the Division of Supply and Sales, Fleet Corporation, went on record as being most favorable to an offer from an unnamed foreign Government to purchase from the Shipping Board its plain and fabricated steel, representing the bulk of the tonnage to be sold, including steel at Hog Island, other shipyards and at steel plants. Further negotiations to this end will, as a result, be taken up at once. The

steel companies probably will absorb local lots of comparatively small tonnage, which are at interior points, so that shipments to the foreign country which offered to buy the steel would go from points near the seashore. It is proposed to hold the scrap till the market is stronger, Captain Bonnaffon saying that not only does the Board desire to get better prices than have been offered, but also to avoid dumping any steel on the present market and depressing it further. A complete stock list of plain material will be prepared by the Shipping Board for use of steel interests in connection with their consideration of plans to make purchases, which probably will be light. The Navy will issue specifications within a week or so of its material together with prices asked. All steel to go to domestic buyers probably will have to be used as scrap.

The War Department surplus steel totals approximately 70,000 tons, including 25,000 tons of high carbon billets. The remainder is shell forgings, shells and heavy melting scrap. Colonel Harts, representing the War Department, said it is necessary to liquidate material as quickly as possible and therefore it cannot be held. Costs of storage and maintenance of organizations compel the War Department to adopt this policy. Most of the steel is in the Middle West, Chicago, Cleveland and Pittsburgh being the chief points of storage. Captain Bonnaffon said it is proposed to sell direct rather than through middlemen. Bids offered recently for 110,000 tons of fabricated material at Hog Island were rejected, he said, because too low.

Steel representatives present to-day were from the Carnegie, Midvale, Jones & Laughlin, Republic, Bethlehem and Brier Hill companies.

### New French Steel Consolidation

The latest example of the consolidation movements among French iron and steel companies is the fusion of three large iron and steel concerns, known in short as the Basse Loire, Nord & Est and Uckange groups, into one group to be known as the Nord & Est Consolidation. Uckange represents the newly formed French banking group which bought out last year the Stumm Brothers' interest in recovered Lorraine and the Saar districts. Nord & Est is an old group that suffered considerably through war devastation and which only recently absorbed the Hauts-fourneaux de l'Esperance and the projected Pont à Vendin works (under construction in 1914). Basse Loire possesses works at Trignac near Nantes and has developed considerably during the war, as its geographic position was favorable for the requirements of national defense.

The new consolidation has ore supplies and coal properties, and seeks a close market relation to, if not control of, structural steel shops, car works, foundries and manufacturing plants, including an export trade.

After reconstruction of the destroyed works in the war zone and the completion of the present program, the new consolidation will have 30 blast furnaces of about 2,000,000 tons annual capacity: 3 at Valenciennes, 4 at Louvroil, 3 at Pont à Vendin, 4 at Jarville, 4 at Trignac, 6 at Uckange and 6 at Neunkirchen (Saar); 4 open-hearth plants (Valenciennes, Aulnoye, Trignac and Neunkirchen), 3 basic Bessemer steel plants, 1 Louvroil, Neunkirchen and Valenciennes) with numerous rolling mills from blooming down to finishing mills; 6 coke oven plants, several manufacturing shops, some 30 iron ore concessions, as a whole or in part, and large coal properties in Belgium, the Saar and north of France.

It is understood that the capitalization will amount to about 100 million francs. Both as to natural resources and financial backing, the new group will compare with the other consolidations in the French iron and steel industry. Of all the assets and works of the new company, about two-thirds are immediately in productive shape, while the other part has to be rebuilt in

connection with the reconstruction program of the devastated provinces.

### The British Institute of Metals

LONDON, ENGLAND, March 12.—The annual general meeting of the Institute of Metals was held on March 9 and 10 at the Institution of Mechanical Engineers, the chair being taken by the president, Engineer Vice-Admiral Sir George Goodwin. Probably the most interesting discussion was that on season-cracking, a type of failure which, although mainly met with in the non-ferrous alloys, is not unknown in ferrous metallurgy, and the study of which is of practical interest to all metallurgists and engineers. A paper deserving special mention is that by Professor Carpenter and Miss Elam, whose researches on crystal growth, although carried out on aluminum, are of general interest and significance and are likely to lead to results of distinctly practical value. The paper was introduced by Miss Elam, who also replied at length to the discussion, in the absence of Professor Carpenter due to ill-health. A review of the papers and discussion will have to be deferred until next week's issue.

### President Favors Lower Freight Rates

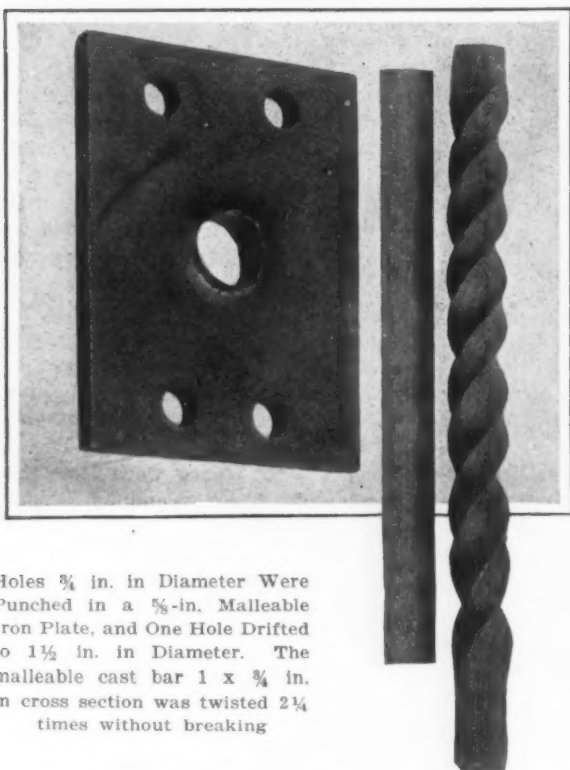
WASHINGTON, March 29.—A move toward lower freight rates apparently is in the mind of the Administration. President Harding this afternoon announced that he has asked for an immediate conference with Chairman Clark of the Interstate Commerce Commission and the chairman of the Railroad Wage Board to discuss the railroad situation, which was the chief topic at the meeting to-day of the Cabinet. The President said rates are too high and it is necessary to do something to stimulate shipments from agricultural and industrial plants and to consider an adjustment in freight rates, pointing out that imports of agriculture are coming into the United States at cheaper rates than can be shipped from the agricultural sections of this country.



### Tests of Malleable Castings

Interesting tests of the physical properties of malleable iron castings showing the toughness and malleability of high-grade castings were made by the American Malleable Castings Association at the annual exhibit of the National Railway Appliance Association held at the Coliseum, Chicago, March 14 to 17. The tests were made with sample castings from foundries of members of the association making certified castings.

A working demonstration was shown of punching  $\frac{3}{4}$ -in. holes in 6 x 8 in. malleable iron plates,  $\frac{5}{8}$  in. in thickness, a punch press being installed for that



Holes  $\frac{3}{4}$  in. in Diameter Were Punched in a  $\frac{5}{8}$ -in. Malleable Iron Plate, and One Hole Drifted to  $1\frac{1}{2}$  in. in Diameter. The malleable cast bar 1 x  $\frac{3}{4}$  in. in cross section was twisted  $2\frac{1}{4}$  times without breaking

purpose. The photograph shows one of these plates punched, the center hole after punching being drifted to  $1\frac{1}{2}$  in. in diameter without reducing any fracture. In some of the 6 x 8 in. plates 20  $\frac{3}{4}$ -in. holes were punched, leaving only  $\frac{1}{8}$  in. space between the holes and no fracture appeared in the narrow strips of metal between the holes.

A demonstration was also made of the resistance of malleable castings to strains. Rectangular test bars 1 x  $\frac{3}{4}$  in. in cross sections and 14 in. long were twisted on a torsion machine through 800 deg. or approximately  $2\frac{1}{4}$  times around without a fracture. Another similar test bar showed its resistance to repeated strains by being twisted 180 deg. three times, being straightened after each twisting. It was then twisted until it broke, the fracture occurring at the end of the complete turn, or 360 deg.

The exhibit included a complete line of castings made by members of the association for railroad work.

### Will Urge Patent Bill's Passage

WASHINGTON, March 29.—Organized engineers of the country, acting through the American Engineering Council, will seek at the opening of the special session of Congress, called for April 11, to have the Nolan Patent Office bill passed.

Failure of the measure in the recent session is attributed to the presence of the Federal Trade Commission section which Edwin J. Prindle of New York, chairman of the council's patent committee, in a report to L. W. Wallace, executive secretary, asserts should not be enacted into law in any form even as a separate bill.

The committee report states its belief that this is a dangerous measure in itself and would open up a most unfortunate activity of the Government.

### Rates to Pacific Points Unchanged

WASHINGTON, March 29.—Reaffirmation of a previous finding that the application of the same rate on iron and steel articles in carloads from Chicago and Terre Haute and Vincennes, Ind., and Pittsburgh to Pacific ports was unduly prejudicial to Chicago, Terre Haute and Pittsburgh is made in a report of the Interstate Commerce Commission handed down last Saturday. The report, prepared by Commissioner Meyer, related to the case of the Inland Steel Co. and other steel producers in the Chicago district and marked the third made on the question of relationship of rates on iron and steel articles for export through Pacific ports. This further consideration of the case leaves the rate relationship unchanged and Chicago and common points will continue to get a rate of 6.5c. per 100 lb., plus the increases authorized in the general advance of last summer.

The complainants alleged that as Chicago was less distant from Pacific ports than Pittsburgh, equal rates unduly preferred Pittsburgh. They pointed out that Chicago, by arrangement of rates the carriers put into effect, has taken less to the Pacific ports than Pittsburgh. The railroads contended that blanket adjustment and equality were the normal transcontinental adjustment and graded rates the exception. They argued that the determination of undue prejudice based solely on the difference in distance for the inland transportation disregarded the fact that the controlling consideration in the movement of export traffic to the Orient from either Pittsburgh or Chicago was the rail-and-water competition by way of Atlantic ports. It was maintained that because Pittsburgh was nearer to the Atlantic ports, they should be allowed to make depressed rates from Pittsburgh to the Pacific ports. That fact, Commissioner Meyer said, had not been ignored. He stated that the commission appreciated that, in order to participate in the business from Pittsburgh, the defendants had made a through rate to Pacific ports lower than the commission could prescribe. He added that the commission had recognized their right to meet competitive conditions, which, under the act, they could not be required to meet, provided that in doing so they did not create unjust discrimination.

### Slow Ore Movement Expected

With only 11 of 46 blast furnaces in the Mahoning and Shenango Valleys in action, operating executives of railroads in the Youngstown district expect a very slow movement of ore this season. "Very little ore will move during the first few months of the season," states an official. "The plants are fairly well stocked with ore at this time and consumption is very light. In making calculations for the season's requirements in 1921, the carriers are counting on carrying less ore than for many years."

The steel companies will move dock balances at the lakes to the furnace stock piles to avoid storage charges as far as possible, but these reserves can be moved only as the producers are able to provide storage space. It is expected that by fall there will be a fair movement of ore down the lakes, but the season generally is expected to be a light one.

### Rejected Bids on Plates

WASHINGTON, March 29.—The Shipping Board has rejected bids it recently received for the fabricated plates for 12 55,000-barrel steel tanks for storing oil. The lowest bid was that of the Pittsburgh-Des Moines Steel Co. which submitted a figure of \$129,120 for furnishing material for all 12 of the tanks, f.o.b. contractor's works. Each tank would require 225 tons of fabricated plates, the total being 2700 tons, and plates generally would range from  $\frac{3}{4}$  to  $9/16$  in., and the tanks are to be 114 ft. in diameter. It is believed that the rejection was due to the fact that the present Shipping Board is waiting for the new board to be selected and also to the belief that lower prices will be obtainable in the near future.

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ESTABLISHED 1855

# THE IRON AGE

EDITORS:

A. I. FINDLEY

WILLIAM W. MACON

GEORGE SMART

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## Blocking Readjustment

Reports from various parts of the country indicate that considerable construction work would go ahead if labor would accept a moderate reduction in wages. Yet the labor unions in most cases are refusing to accept any change in pay or hours. The strength of union organization in the building trades is equaled in very few industrial fields, but there are limits on the power of any association of men, no matter how cohesive and well disciplined. Napoleon's army, the greatest of its day, suffered disastrous defeat at the hands of a Russian winter. In attempting to resist the economic forces now at work, some labor unions are plainly riding to a fall.

The logical outcome of such an attitude is indicated by the experience of the union molders. At a meeting in December the National Executive Board of the International Molders' Union of North America decided that it would not agree to any reduction in wages or changes in working conditions. This policy was reaffirmed on Jan. 31, as follows: "Our organization desires to assure its membership that in this readjustment of affairs which is taking place throughout the country and which affects every trade and every calling, we propose to put forth every effort we possess in resisting the lengthening of hours and the reduction of wages."

Acting on these instructions, molders are on general strike in Denver, Des Moines, Cincinnati, Buffalo, Newark, N. J., and Baltimore, and there are strikes in one or more shops in 61 other cities. The union is now paying from its treasury \$55,000 a week for strike benefits, or at the rate of \$9 a week per striking member. On Jan. 1 the total assets of the organization were about \$350,000. The time is not far distant when the payment of benefits will have to be discontinued.

That the rank and file of molders are beginning to lose faith in the judgment of their leaders is indicated by a recent development in Philadelphia. A large shop in that city told its men it could not continue operations unless they accepted a 15 per cent cut in wages, which would reduce the union rate of \$7.20 a day to \$6.12. In accordance with the action of the National Executive Board, a molders' strike was called, but only

about one-half of the men quit work. For the others a reduced wage of \$6.12 a day was apparently much more attractive than the union benefit of \$9 a week.

What has occurred in Philadelphia will happen in other industries sooner or later. If union leadership were able, it would recognize the interdependence of prices, production costs and wages, and would not resist the process of readjustment through futile efforts to maintain wage scales which present business conditions do not warrant.

## The Steel Corporation's Report

Year by year the annual reports of the Steel Corporation have shown how strongly the corporation has been fortifying its position. In a casual glance at the report the deductions made before earnings are reported may be missed. In the past four years deductions have been made from receipts before reporting earnings, totaling \$135,000,000 to write off portions of war time expenditures. These deductions have been made partly to cover the cost of special facilities installed by reason of the war, and partly to cover the extra cost of installation of various facilities, growing out of war time conditions. The allowances are shown on page 36 of the last report and corresponding pages of previous reports, as follows:

1917.....	\$29,785,000
1918.....	40,000,000
1919.....	38,297,854
1920.....	27,000,000

Total .....\$135,082,854

These allowances are entirely separate from appropriations made from surplus for construction work and other purposes. During the four years the property investment account grew by only \$286,724,384, from \$1,708,376,100 to \$1,995,100,484. The property account in the balance sheet of Dec. 31, 1920, is, however, diminished by \$388,341,938, by depreciation and depletion funds and general depreciation appropriated from income, so that the property account stands in the balance sheet at \$1,606,758,546.

These deductions represent a policy of recog-



nizing pre-war conditions as normal for the future. The philosophy is the reverse of that of the 50-cent dollar, as that could be construed to justify marking up the dollar value of the properties owned at the time the inflation began.

The same philosophy is followed in deducting \$95,000,000 from inventory. The original inventory, at \$353,363,497, is constructed on the basis of cost or market value Dec. 31, 1920, whichever was the lower, while the \$95,000,000 is to allow for excesses over values on Dec. 31, 1915, on which date prices were low even by comparison with the pre-war periods usually cited for comparison. For an integrated company, controlling its own raw materials and thus not subject to market fluctuations in prices of ore, coal and coke, such a deduction represents rigorous charging off, especially after a similar deduction of \$90,000,000 from the inventory as of Dec. 31, 1919.

Obviously, when the Steel Corporation can report satisfactory earnings after making these deductions, it can operate on narrower margins in years when it does not have to make special deductions, and still have good earnings. The reported earnings for 1920, after payment of subsidiary company bond interest, were \$176,686,898. The shipments of rolled steel and other finished products (excluding pig iron, ore, coke, scrap and sundry materials and by-products) were 12,453,243 tons domestic and 1,645,464 tons export, a total of 14,098,707 tons, the earnings if assigned entirely to the steel products being therefore \$12.53 per ton. The per ton earnings similarly computed have ranged from under \$9 in 1912 and 1914 to between \$14 and \$17 in 1902, 1903, 1906, 1907, 1908 and 1918. In two years they were above \$17, in 1916 about \$21.50, and in 1917 about \$20.

The average rate of operation during 1920 is stated at 88.3 per cent. This is certainly a very high percentage. Two factors contributed, one being that the corporation continued to operate at a high rate in the closing months of the year, after the independents had slowed down, the other being apparently, that the corporation rates its capacity very conservatively. The actual outputs as reported were 14,532,646 tons of pig iron, 19,277,960 tons of steel ingots and 14,228,502 tons of finished steel products for sale.

The deepening depression of the British steel industry is revealed in statistics just issued on employment of iron and steel workers in the second half of 1920. Returns were received for each month from 165 companies which in June employed about 175,000 men and were responsible for approximately 80 per cent of the total pig iron and crude steel production. Taking June as the basis, or 100 per cent, the peak was reached in September. Then there was a decline in October and November, due to the coal strike. A slight improvement came in December, but in January the percentage fell to 81.1 per cent or much lower than even during the coal strike when the lowest was 89.8 per cent in November. The depression is further emphasized by the production and export statistics. British blast furnaces in February produced only 463,600 gross tons, which is

less than in any month since monthly figures have been recorded, if we except the months of the railroad strike in 1919 and of the coal strike in 1920. The February steel output of 483,500 tons is the smallest in two years with one exception. Steel exports have declined lately until they are close to 50 per cent of the 1913 rate. The situation is thus summarily put by the London *Metal Bulletin*: "Extravagant prices must be brought down and extravagant profits must be abandoned if the steel trade of this country is to be saved from destruction."

### Labor in the Building Trades

Many observers hold that the chief step still to be taken in our general readjustment is a revision in wages and working conditions in the building trades. They hold that prices of commodities in general have had a very substantial reduction, and that even building materials are no longer very high priced, so that if the labor cost in construction work were suitably revised there would be an invitation to prospective builders to take hold.

These observers take the position that if activity develops in the building trades a stimulus will be given to business in general. The broad theory is that business in general cannot be active unless there is confidence, and that there cannot be confidence when men see that what is commonly called the greatest need, that of more dwelling houses, is not being supplied.

Emphasis is laid on the point that the requisite readjustment in the building trades is not chiefly, or even largely, a matter of hourly or daily wage rates. There are three items, the rate of wages, the quantity of work done, and the working conditions in general. A mere percentage reduction in the wage scale rates would not suffice. If the day's performance of a bricklayer or a carpenter is only one-half what it should be, the restoration of a full day's work would do more good than a 50 per cent wage reduction. Technically the result in performance per dollar expended would be the same, but practically the builder is better off the fewer men are required to complete the job; and if there are only so many workmen, for each to double the amount of work he does is to double the amount of construction work accomplished and to double the quantity of building material for which a market is furnished.

The public is only now learning how very detrimental have been the working conditions imposed by the building trades unions in many communities. There has been, for instance, the restriction in apprenticing. By the modern method of advertising in the daily newspapers the building trades employers in Pittsburgh have made it known that one of their objectives in securing a readjustment for the scale year beginning May 1 is the adoption of a principle whereby if the union is unable to supply a contractor with all the men requisite for a job the contractor is permitted to employ others, the new men to be permitted thereupon to join the union. It is already known that this will prove one of the most ob-

jectionable items to the officials of the unions, yet it certainly would look like a very fair stipulation in any other line of work.

There is one great change in affairs that improves the augury for a reasonable readjustment in building trades labor conditions, and that is the aspect in which the matter is now presented to the public and the artisans involved. Last year the talk everywhere, in the newspapers and in the possibly well-meaning but certainly ill-timed propaganda from Washington, was that the country was very short in construction, particularly of dwelling houses and would simply have to get busy. All such talk played into the hands of the leaders of these artisans. Now there is a change, the common talk being that prospective builders will not go ahead until they can make something like a reasonable bargain with the workmen. Instead of being encouraged to hold out for their terms the men are being given to understand that they must compromise. Thus the prospect for building trades activity has been improved.

### Inquiry as to Coal Supply

In a time when industrial operations are greatly curtailed, it might seem that there would be plenty of coal for all consumers and that no necessity would exist for determining the amount of stocks on hand; but experts who have been watching the situation closely state that it is highly important now to know the condition of stocks because of uncertainty connected with the coal supply. Production is down to the lowest point since April, 1914, but it is not known whether this is due merely to consumption falling off or whether, as some observers think, it means that consumers are unwisely using their stocks as they did in 1919 and postponing buying. A determination of stocks on hand is therefore needed, and the Geological Survey has just been directed by the Secretary of the Interior to make a report similar to that of last year on consumers' stocks of coal as of April 1, the opening of the new coal year. The report will cover public utilities, railroads, industrial companies and retail dealers; but to simplify the investigation as much as possible, only a limited number of representative consumers will be canvassed and only a few questions will be asked. It is hoped that with the co-operation of the trade, the results can be published within 30 days.

THE IRON AGE urges this year, as it did at the time of the canvass last year, that iron and steel companies do their full part in co-operating with the Geological Survey, especially in promptly replying to the letter which has been sent out by the Survey asking questions as to stock on hand and coal consumed.

Importations of iron ore have increased to a marked extent since the war, but they are still below the pre-war rate. Last year the receipts were only about 50 per cent of the 1913 total, but nearly three times the importations in 1919. The actual figures were 1,268,538 gross tons in 1920, comparing with 476,461 tons in 1919 and 2,594,770

tons in 1913. There has been an increase in receipts of Spanish and Swedish ore, while shipments from Cuba are about half what they were in 1913. The largest increase has been in ores classified as coming from "other countries," the 1920 total being 210,824 tons against only 97,166 tons in 1913. These figures have a bearing on the article in THE IRON AGE, Feb. 10, relating to the fear of competition of foreign with Lake Superior ores in the Eastern market due to lower prices and lower ocean freights, against high domestic freight rates by rail. Conditions will continue to favor foreign ore sellers in the East, unless delivered prices on Lake ores can be further reduced.

### Swedish Iron and Electric Steel

There has been a sharp decline in the production of Swedish bar iron. A returning American traveler reports that, as contrasted with an output averaging 200,000 tons a year over the past five years, the production lately has been almost negligible.

From other sources comes the report of apprehension in Sweden over the rapid increase in the production of steel in the electric furnace in other countries. Seeing that a high quality product can be made electrically from inferior raw materials there is no doubt cause for this feeling. A more important factor, however, is the extent to which electric tool steel, both carbon and high-speed, is replacing the crucible product. Before the war, in this country and particularly in England, practically all tool steels were made in crucibles, with Swedish iron as the base material. During the war and since, especially in the United States, these steels more and more have been made in electric furnaces without the use of such high grade raw materials. Even in Sheffield considerable high-speed steel is now made electrically. While there are ardent advocates of both processes, it is strongly claimed that electric tool steel, properly made, is fully equal to crucible.

The marked change from the crucible to the electric process in the tool steel industry is the principal cause of this decline in the use of Swedish iron. England is buying less and so is this country. Our imports of bar iron last year were less than one fifth of those in 1913 while British imports in 1920 were about one-fourth as large as in 1913. Electric furnaces are also making a low carbon steel which, in the form of bars, is fully equal to Swedish iron for many uses.

### Will Include Steel Industry

WASHINGTON, March 29.—Secretary of Commerce Hoover has not as yet named an advisory committee from the steel industry to co-operate with the department in its plans to conduct a survey of world production of consumption, stocks, markets, etc. He probably will select one in the near future, and it is assumed it will be chosen from the American Iron and Steel Institute. The department already has asked the National Foreign Trade Council to co-operate with it, and this body, having a large iron and steel representation, undoubtedly can aid in supplying information with regard to the steel industry as well as making its wants from the Government known.



## CORRESPONDENCE

### More Business in Government

*To the Editor:* A copy of the minority report of the committee which had under consideration the Calder bill has just been received. One member of the committee said in this report:

"I am certainly not aware of any peace-time authority which Congress has to determine prices of commodities, or to authorize the executive department to fix or regulate prices of commodities or margins of profit whenever an emergency shall be declared to exist."

The Government is certainly not in a position to dictate to business at large what are justifiable margins of profit or even judge what are reasonable costs. For one thing, manufacturers as a rule are close buyers, and in most cases have reduced buying to a science. On the other hand, the Government has a great task ahead of it in setting its own house in order in this respect.

I am reminded of an incident which is simply a straw indicating the direction of the wind. Some little time ago we received from one of the Government departments a proposal covering several thousand galvanized iron stakes. Instead of submitting a bid we wrote to the official in charge, calling his attention to the fact that we had on hand more than enough of these same stakes to meet their requirements, they being held in our warehouse subject to the settlement of a contract, work upon which had been stopped at the time the armistice was signed. No reply was ever received to this communication. In making up our statement of settlement a salvage value was placed on these stakes, but when an adjustment was finally effected this item was among those representing material left on our hands. When the proposal referred to above was received the value of this material was higher than when the stakes on the original contract were purchased, so that the Government could have saved at least the difference between the two values and possibly more. All of which is just another argument for less Government in business and more business in Government.

H. D. MURPHY.

Medford, Mass., March 23.

### Railroad Accident Report Corrected

WASHINGTON, March 29.—The Interstate Commerce Commission has officially corrected an error contained in its accident bulletin No. 74 in which it was said that defective cast steel wheels caused 22 accidents. Every one of these accidents, investigation by the statistical division of the Commission shows, was caused by defective cast iron wheels and its records have been corrected accordingly. The commission, after having its attention called to the error, took up correspondence with each of the railroads involved, and upon receiving verification of the claim that an error was made, corrected each report. An abstract from the bulletin was published in THE IRON AGE of Dec. 2, 1920.

### Nominees for Metal Trades Councilors

The nominating committee of the National Metal Trades Association will offer two nominees for councilor at the annual convention in April, in addition to those mentioned in THE IRON AGE on March 24, page 769. M. B. McLauthlin, the George T. McLauthlin Co., Boston, has been named as a candidate for councilor for two years, and E. J. Miller, St. Louis Screw Co., St. Louis, as a candidate for councilor to fill the unexpired term of D. M. Wright.

The plant of the National Malleable Casting Co., in East St. Louis, Ill., has been closed indefinitely and about 200 men thrown out of work. The cause was lack of business. Three months ago the plant employed 750 men, but has been decreasing the force.

### National Association of Brass Manufacturers Meets in Chicago

The National Association of Brass Manufacturers held its spring meeting at the Hotel Sherman, Chicago, on March 22, 23 and 24. It authorized the appointment of a new catalog and list committee but decided not to issue a new catalog until 1925.

The legislative committee was urged to hold itself in readiness to proceed to Washington during the special session of Congress, to do its part in the matter of adjustment of the excess profits tax. The standing legislative committee, and all members were urged to do their part to obtain the repeal of the Adamson law.

President Fischer was elected to represent the association at the next meeting of the National Pipe and Fittings Association, to be held in Cleveland.

Reports were called for as to the present outlook and business conditions, and while some plants reported operating full force and time, the great majority reported working short hours and short forces. The universal opinion was held that the attitude of labor is the key to the situation and that if the workingmen would take a fair and rational view and accept a reasonable reduction in wages, it would go a very long way toward relieving the present tie-up in the building industry.

### At Low Ebb in Shenango Valley

Industrial operations are at the lowest ebb in many years in the Shenango Valley. The blast furnace of the Stewart Furnace Co. is the only stack in commission between Sharpsville, Pa., and West Middlesex, Pa.

The National Malleable Castings Co. at Sharon has reduced production by cutting its working hours. The sheet and tin plate mills of the American Sheet & Tin Plate Co. and the departments of the American Steel & Wire Co. will continue indefinitely on a three-day per week schedule.

The Petroleum Iron Works and Standard Tank Car Co. are operating on a reduced basis. At Sharpsville, the only industry operating is the Sharpsville Boiler Works.

### Reduced Accident Rate

All men handling molten metal in the plant of the Cambria Steel Co. are required to wear fireproof leggings and aprons, as well as head and eye protection. Since this rule was put into force there has been a reduction of about one-half in the number of burns, and their severity is considerably less.

This regulation followed a similar study in the machine shops, foundries and forging shops, where many toes had been injured by falling objects. The safety department found a shoe so built that it would avoid most of the trouble from this source and sold the shoes to the men at cost. The sales quickly passed 1000 pairs, and there was a decided reduction in the number of toe and foot accidents reported.

### The Iron Age and Its Readers

Back numbers and whole volumes of THE IRON AGE have been in unusual demand in the last few months. Part of this has represented the efforts of readers abroad to complete their files, chiefly for binding purposes, but war's uncertain mail deliveries have not affected conditions within the country and the inference is that an increasing number are arranging to put their IRON AGE files in permanent form. The filling in of odd numbers, obtained through agencies dealing in back numbers, shows that in some cases as many as ten years' copies had been preserved before resorting to the binding. Several orders were received from Germany and France for complete sets covering the period of the war. One Luxemburg steel plant secured filling in numbers over a period of 13 years.



# Iron and Steel Markets

## MOTOR WORKS BUSIER

### Steel Trade Little Changed in Price or Volume

#### Further Wage Reductions May Come—Pig Iron Output Still Falling

Increased operation of automobile plants is the main cause of betterment in the steel situation this week. Apart from the Ford company, the motor car industry is now running at about 25 per cent of capacity, and releases of suspended steel orders have helped some mills. However, the effect on the steel industry as a whole is being overrated in current news, seeing that all motor vehicles built in 1920 consumed only 5 per cent of the year's steel output.

The expectation of lower prices for all forms of steel and the belief that the requisite freight rate reductions may take weeks are holding the market within narrow limits as to volume of new business, shipments from mills and range of prices.

As a whole the steel industry is somewhat under a one-third operation. Some of the Steel Corporation's plants in the North, particularly in the Chicago district, are rolling less product, while its Alabama mills are doing better. Some independent companies are working more men, notably sheet mills at Youngstown; others, after a fortnight of fair operation, are easing off.

Consumers all along the line are working for a constant reduction in inventory and thus free buying of steel is a matter of the future.

Comment in the trade on possible price and wage reductions by the Steel Corporation has turned on the fact that the Corporation's earnings for 1920, if assigned entirely to steel products, represent \$12.82 per ton. The losses of some independent companies on quotations \$7 to \$13 per ton below those of the Corporation are not offset by wage reductions thus far made, and lower prices and lower wages by the Steel Corporation may mean further wage reductions at other works.

The repair policy forced on the railroads by their operating losses gives poor promise of steel consumption from that source. The number of bad order cars on sidings is increasing rapidly and shops are being closed. The Santa Fe has bought 1300 gondola cars, for which 13,000 tons of steel is yet to be placed.

A Pittsburgh mill has made a sharp reduction in its warehouse prices. Cleveland prices from store are still considerably above the new Pittsburgh schedule with freight to Cleveland added.

Ten of the largest fabricating steel jobs closed in the week average 435 tons. There are signs that apartment house work is under active negotiation in New York. Chicago reports a price on fabricated steel below \$74 for the union station building let last week. Wages rather than steel cost are holding up construction.

Of the 400,000 tons of surplus steel held by the Shipping Board and War and Navy departments, it now seems probable, following a conference at Washington, that about 70,000 tons held by the

War Department will soon be sold. The disposal of larger tonnages held by other departments may await an advance in prices or be sold to a foreign Government which has offered to take a considerable part of the accumulation.

An automobile manufacturer has bought spring steel on the 2c. bar base, with 15c. per 100 lb. extra, as compared with the 25c. extra which formerly obtained.

In most centers pig iron sellers have been able to check the downward trend of prices on moderate tonnages, but further weakness has developed at Cleveland and Chicago. Chinese foundry iron is being offered in San Francisco at \$38, delivered, which is less than American furnaces have been quoting. Merchant furnace output has been cut down further in the past week.

Close competition is reported on the inquiry for 10,000 tons of 100-lb. rails for the South Manchuria Railway. Only half the amount may be called for at this time.

With the drying up of export demand a late order for 2000 to 3000 tons of American skelp looks large, particularly in the face of Belgian competition.

The access of foreign steel to Pacific Coast and Gulf points is made easy by present high rail freights from Pittsburgh. Belgian bars have been offered at Antwerp prices, equivalent to 2.30c., San Francisco, whereas domestic bars at 2c., Pittsburgh, with 1.665c. rail freight to the coast, would be 3.66c., delivered.

Estimates are that less than 40,000,000 tons of Lake Superior ore will be shipped this season, the smallest total since 1914, when less than 33,000,000 was moved. Fully 31,000,000 tons of ore is in furnace yards and on docks. Many mines are working one instead of two 8-hr. shifts, few are turning out over 50 per cent of the normal, and another wage cut is likely within a few weeks.

## Pittsburgh

PITTSBURGH, March 29.

Improvement in the automobile industry, although slight in a general way, appears to be progressive, and as a consequence releases against suspended orders in automobile steel have been more numerous and there is a more cheerful feeling among the manufacturers affected. Those companies serving the Ford Motor Co. have been especially fortunate for the reason that that company now is reported to be producing 3000 cars daily and to be making plans for the summer months of 100,000 cars monthly. It is reported here that the Ford company in the past 60 days has reduced its inventory from \$102,000,000, where it stood Dec. 31, 1920, to \$66,000,000. Apparently this company has decided to work up its inventories and so long as its orders for cars hold up it will provide a considerable amount of business and engagement of plant capacity in sheet strips and other automobile steel for the companies with which it had placed orders. Prices in the original orders have been revised generally and shipments are back at least to the Steel Corporation basis. This is indicated by the fact that the corporation has been one of the beneficiaries of the releases. While a number of the automobile companies are doing better in the matter of production and the Reo Motor

## A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics

At date, one week, one month, and one year previous

For Early Delivery

Pig Iron, Per Gross Ton:	Mar. 29, 1921	Mar. 22, 1921	Mar. 1, 1921	Mar. 30, 1920
No. 2X, Philadelphia <sup>†</sup> ...	\$27.26	\$27.26	\$28.34	\$46.05
No. 2, Valley furnace <sup>†</sup> ...	25.00	25.00	26.50	42.00
No. 2, Southern, Cin'ti <sup>†</sup> ...	29.50	29.50	31.00	43.60
No. 2, Birmingham, Ala. <sup>†</sup> ...	25.00	25.00	26.50	40.00
No. 2, foundry, Chicago <sup>*</sup> ...	25.00	25.00	27.00	43.00
Basic, del'd, eastern Pa. <sup>*</sup> ...	25.00	25.00	27.26	44.80
Basic, Valley furnace <sup>*</sup> ...	23.00	23.00	25.00	42.00
Bessemer, Pittsburgh <sup>*</sup> ...	26.96	26.96	28.96	43.40
Malleable, Chicago <sup>*</sup> ...	25.00	25.50	26.50	43.50
Malleable, Valley <sup>*</sup> ...	25.00	25.00	27.00	43.00
Gray forge, Pittsburgh <sup>*</sup> ...	25.96	25.96	27.46	42.40
L. S. charcoal, Chicago <sup>*</sup> ...	38.50	38.50	38.50	56.50
Ferromanganese, Atl. port.	90.00	90.00	90.00	250.00

### Rails, Billets, etc., Per Gross Ton:

Bess. rails, heavy, at mill.	\$45.00	\$45.00	\$45.00	\$55.00
O.-h. rails, heavy, at mill.	47.00	47.00	47.00	57.00
Bess. billets, Pittsburgh <sup>*</sup> ...	38.00	38.50	38.50	60.00
O.-h. billets, Pittsburgh <sup>*</sup> ...	38.50	38.50	38.50	60.00
O.-h. sheet bars, P'gh. <sup>*</sup> ...	38.00	38.50	42.00	80.00
Forging billets, base, P'gh. <sup>*</sup> ...	43.50	43.50	43.50	80.00
O.-h. billets, Phila. <sup>*</sup> ...	44.24	44.24	49.24	64.10
Wire rods, Pittsburgh <sup>*</sup> ...	52.00	52.00	52.00	70.00

### Finished Iron and Steel,

Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Iron bars, Philadelphia <sup>*</sup> ...	2.45	2.45	2.70	4.25
Iron bars, Chicago <sup>*</sup> ...	2.60	2.60	2.60	3.75
Steel bars, Pittsburgh <sup>*</sup> ...	2.00	2.00	2.00	3.75
Steel bars, New York <sup>*</sup> ...	2.38	2.38	2.38	4.02
Tank plates, Pittsburgh <sup>*</sup> ...	2.00	2.00	2.10	3.75
Tank plates, New York <sup>*</sup> ...	2.38	2.38	2.48	4.02
Beams, etc., Pittsburgh <sup>*</sup> ...	2.00	2.10	2.10	3.25
Beams, etc., New York <sup>*</sup> ...	2.68	2.48	2.48	3.52
Skelp, grooved steel, P'gh. <sup>*</sup> ...	2.25	2.35	2.35	2.75
Skelp, sheared steel, P'gh. <sup>*</sup> ...	2.45	2.50	2.50	3.00
Steel hoops, Pittsburgh <sup>*</sup> ...	2.80	2.80	2.80	4.00

\*The average switching charge for delivery to foundries in the Chicago district is 70c. per ton.

<sup>†</sup>Silicon, 1.75 to 2.25. <sup>\*</sup>Silicon, 2.25 to 2.75.

The prices in the above table are for domestic delivery and do not necessarily apply to export business.

Sheets, Nails and Wire,	Mar. 29, 1921	Mar. 22, 1921	Mar. 1, 1921	Mar. 30, 1920
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Sheets, black, No. 28, P'gh.	3.85	3.85	4.00	5.50
Sheets, galv., No. 28, P'gh.	5.00	5.00	5.25	7.00
Sheets, blue an'd, 9 & 10.	3.00	3.00	3.20	4.50
Wire nails, Pittsburgh <sup>*</sup> ...	3.00	3.00	3.10	4.00
Plain wire, P'gh. <sup>*</sup> ...	3.00	3.00	3.00	3.50
Barbed wire, galv., P'gh. <sup>*</sup> ...	3.85	3.85	3.85	4.45
Tin plate, 100-lb. box, P'gh.	\$7.00	\$7.00	\$7.00	\$7.00

### Old Material, Per Gross Ton:

Carwheels, Chicago <sup>*</sup> ...	\$14.00	\$14.50	\$19.00	\$37.50
Carwheels, Philadelphia <sup>*</sup> ...	18.00	18.00	20.00	42.00
Heavy steel scrap, P'gh. <sup>*</sup> ...	13.00	14.00	15.00	27.50
Heavy steel scrap, Phila. <sup>*</sup> ...	12.50	13.00	13.50	25.00
Heavy steel scrap, Ch'go. <sup>*</sup> ...	11.00	12.00	14.00	24.50
No. 1 cast, Pittsburgh <sup>*</sup> ...	20.00	21.00	22.00	34.00
No. 1 cast, Philadelphia <sup>*</sup> ...	18.00	19.00	22.00	38.00
No. 1 cast, Ch'go (net ton) <sup>*</sup> ...	13.50	14.00	16.75	38.00
No. 1 RR. wrot, Phila. <sup>*</sup> ...	17.00	17.00	18.00	35.00
No. 1 RR. wrot, Ch'go (net) <sup>*</sup> ...	10.50	11.00	13.00	28.00

### Coke, Connellsville,

Per Net Ton at Oven:

Furnace coke, prompt <sup>*</sup> ...	\$4.00	\$4.25	\$4.50	\$6.00
Furnace coke, future <sup>*</sup> ...	5.25	5.75	5.75	6.00
Foundry coke, prompt <sup>*</sup> ...	5.50	5.50	5.50	7.00
Foundry coke, future <sup>*</sup> ...	6.00	6.00	6.00	7.00

### Metals,

Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Lake copper, New York <sup>*</sup> ...	13.00	12.12 1/2	13.00	19.25
Electrolytic copper, N. Y. <sup>*</sup> ...	12.02 1/2	11.87 1/2	12.50	19.00
Zinc, St. Louis <sup>*</sup> ...	4.65	4.70	4.75	8.50
Zinc, New York <sup>*</sup> ...	5.25	5.20	5.10	8.85
Lead, St. Louis <sup>*</sup> ...	4.00	4.00	3.90	8.75
Lead, New York <sup>*</sup> ...	4.25	4.00	4.00	9.00
Tin, New York <sup>*</sup> ...	29.25	28.50	30.00	63.75
Antimony (Asiatic), N. Y. <sup>*</sup> ...	5.25	5.25	5.20	11.50

Co. is reported to be exceeding former production records, the most reliable estimate received here is that the automobile industry, exclusive of the Ford company, is operating slightly less than 25 per cent of capacity.

Excluding the movement of steel to the motor companies it must be said that there has been no appreciable increase in business nor anything approaching a real revival of demand. The needs of consumers are greater than they were a few weeks ago, but there is a vast distinction between demand and needs. Buyers generally are covering their actual needs and these are being met without materially increasing productive capacity.

There has been a distinct gain in active sheet making capacity among independent companies in the Mahoning and Shenango valleys, which this week is about 46 per cent engaged as compared with about 32 per cent last week. Some sheet making capacity in the Wheeling district also has started up, but in the latter case finishing mills rather than hot mills are involved. There is more constant operation of strip mills than was the case recently. This improvement is largely, if not entirely, due to the automobile company releases of suspended tonnages. No special change is observed in the operating conditions of the Steel Corporation subsidiaries, other than that the National Tube Co. at a number of its plants is accommodating its schedules to its live obligations and these are not so large and pressing as they were a short time ago. Changes in prices since a week ago have been neither numerous nor important. The market is highly irregular for the reason that some of the independent companies are not going after business as strongly as formerly and quotations of these companies are up somewhat from the extreme low levels. So little business is developing, however, that quotations mean little or nothing.

Altogether the market is still in an untested state and despite the more general consideration of costs as a factor in selling prices, the appearance of a large inquiry would revive real competition among independent producers. The more apt description of the present market is that it is a waiting one and the thing that most of the independents are waiting for to-day is an announcement as to prices and wages by the Steel Corporation. There are two opinions as to what the effect of a reduction in prices by the corporation would be. Some figure that it would be followed by an immediate improvement in the demand, while others take the view that it would postpone improvement until such time as buyers were convinced that the bottom had been reached.

The pig iron market has shown no life and prices again are largely nominal. In finished steel lines the most active spot, as far as inquiries are concerned, is in plain structural material. No orders worthy of comment are coming out, but the fabricating interests have had so many inquiries lately that they naturally seek sources and prices of tonnages to be able to act intelligently when naming prices against the fabricated steel.

The scrap iron and steel market is weakening because of the utter lack of consumptive demand, and it is observed that coke and coal prices are not being strengthened by an extremely small production.

**Pig Iron.**—The little spurt of activity of a week ago has subsided fully as quickly as it developed. The Allegheny Steel Co., which put out an inquiry for 1000 tons each of Bessemer and basic, has bought about 500 tons of the latter grade at about \$23 Valley furnace. A quotation of \$25, Valley furnace, made this company against its inquiry for Bessemer iron, failed to bring the business. A fair number of small lot orders for foundry iron for prompt shipment have

been placed, generally at \$25, Valley furnace, for No. 2 grade. Some makers of the latter are not disposed to go below \$26, but the willingness of others to accept business at \$25 makes difficult sales at a higher figure, except to those users who have long run upon the product of a particular furnace and will not take other iron. Merchant producers of the steel making grades of iron still are holding to \$25 for basic and \$27 for Bessemer, and are unwilling to go lower until they have definitely worked out lower producing costs. The Mattie furnace of the A. M. Byers Co., Girard, Ohio, will go out of blast at the end of the month.

We quote Valley furnace, the freight rate for delivery to the Cleveland or Pittsburgh district being \$1.96 per gross ton:

Basic .....	\$23.00 to \$25.00
Bessemer .....	25.00 to 27.00
Gray forge .....	24.00 to 26.00
No. 2 foundry .....	25.00 to 26.00
No. 3 foundry .....	24.50 to 25.50
Malleable .....	25.00 to 26.00

**Ferroalloys.**—The Navy Department has put out an inquiry for 1500 tons of ferrovanadium, 200 tons of 10 to 12 per cent ferrosilicon and 200 tons of 50 per cent ferrosilicon, for shipment to the naval ordnance plant at South Charleston, W. Va. This is the one important inquiry that has come out here in the past week. Almost no interest is being taken in the market by other consumers. Generally, prices are in the buyers' favor, although one maker of spiegeleisen who had quoted \$32.50 furnace for 19 to 21 per cent material, recently withdrew that quotation and substituted one of \$35. Another important maker now is quoting \$34 furnace, but no business has developed in this district and it is intimated that a real order could be placed at no advance over the recent base of \$32.50, furnace. The attempt to secure business in 50 per cent ferrosilicon at \$93 to \$95 furnaces, freight allowed, has not been especially successful and one maker has authorized his agent in this district to take business at \$90 delivered. There is a positive dearth of inquiries for ferromanganese and no interest whatever is observed in the lower grades of ferromanganese or silveries.

We quote 76 to 80 per cent ferromanganese at \$90 delivered on domestic and \$100 c.i.f. Atlantic seaboard, the quotation of English producers. We quote average 20 per cent spiegeleisen at \$32.50 to \$33 furnace, 50 per cent ferrosilicon \$90 to \$95 furnace, freight allowed, for domestic and \$90 to \$95 delivered for foreign material. Bessemer ferrosilicon is quoted f.o.b. Jackson County and New Straitsville, Ohio, furnaces, as follows: 9 per cent, \$54.50; 10 per cent, \$58; 11 per cent, \$61.30; 12 per cent, \$64.60. Silvery iron, 6 per cent, \$40; 7 per cent, \$41.50; 8 per cent, \$43.50; 9 per cent, \$45.50; 10 per cent, \$48; 11 per cent, \$51.30; 12 per cent, \$54.50. The present freight rate from Jackson and New Straitsville, Ohio, into the Pittsburgh district is \$4.06 per gross ton.

**Billets, Sheet Bars and Slabs.**—A slightly stronger tendency is observed in sheet bars as enlarged finishing mill operations are enabling makers who produce their own steel to reduce their stocks, while nonintegrated plants are getting closer to the time when they will be in the market for fresh supplies. The lowest quotation recently heard is \$38, but some makers who would have been willing a week ago to have sold at that price now are inclined to ask more. Too little is going on to give any basis to any price at the moment, but \$38 to \$40 is a fair appraisal of today's price possibilities. Very little interest is being shown in soft billets, but \$38 would not be refused by most independent makers. The market is dull and nominal on forging steel and on slabs.

We quote 4 x 4-in. soft Bessemer and open-hearth billets at \$38; 2 x 2-in. billets, \$40; Bessemer and open hearth sheet bars, \$38 to \$40; slabs, \$37 to \$39; forging billets, ordinary carbons, \$43.50, all f.o.b. Youngstown or Pittsburgh mills.

**Wire Rods.**—There is no change in the situation. The American Steel & Wire Co. is quoting \$57 for base size of soft rods while the price of the independents is \$52 with practically no sales being made and inquiries extremely few. Prices are given on page 879.

**Skelp.**—Demands are few and small as the nonintegrated makers of tubular goods are well caught up on their orders and not getting many new ones. The Steel Corporation has made no change in its prices, still holding to 2.45c., 2.55c., and 2.65c., for grooved, universal and sheared, while the independent makers are known to be in a receptive mood for business at

\$4 per ton below these figures, or 2.25c., 2.35c., and 2.45c.

**Wire Products.**—Buyers are merely meeting their actual needs, and these consist entirely of small lots for immediate shipment. Makers are finding it difficult to accumulate a backlog and plant operations are in keeping with the current demands. Demands from agricultural sources still are feeble, although at least one maker is taking business in plain galvanized wire fence at \$3.45, and quietly some of the independents are making price inducements in woven wire fence.

We quote wire nails at \$3.00 to \$3.25 base per keg, Pittsburgh, and bright basic and Bessemer wire at \$3 to \$3.25 base per 100 lb., Pittsburgh.

**Iron and Steel Bars.**—Demand for merchant steel bars still is moderate and about the only business which is developing is for small tonnages which will meet the actual and immediate requirements of buyers. On such business 2.10c., base, is the more common price, but at least one independent is taking small orders and shipping from mill stocks at 2c. flat. No trouble would be experienced in getting most independents interested in sizable tonnages at the latter figure. Iron bars still are slow of sale despite the recent cut of \$5 a ton, by makers here.

We quote steel bars rolled from billets at 1.95c. to 2.35c.; reinforcing bars, rolled from billets, 2c. to 2.35c. base; refined iron bars, 2.75c., in carloads, f.o.b. mill, Pittsburgh.

**Structural Material.**—All of the fabricating interests here report inquiries are heavy, but actual awards still are few, and this week only small tonnages are involved. The McClintic-Marshall Co. reports an award of 100 tons for the Ohio River lock and dam No. 45, just below Pittsburgh; 175 tons for bridge repairs from the city of Lowell, Mass.; 175 tons for an addition to the building of the U. S. Fidelity & Guaranty Co., Baltimore; 150 tons for a mill building and lean-to, and 180 tons for a boilerhouse placed by the Czarnikow-Riondo Co., New York, for shipment to Cuba. There are a good many inquiries for plain material in keeping with the inquiries for structural projects, but actual business still is small and prices are rather indefinite. In spite of the higher asking prices of some of the independent steel companies, structural interests still believe they will be able to cover their requirements at the low prices named when the independents started their drive for business. Prices are given on page 879.

**Plates.**—An inquiry for 1200 tons recently was put out by one of the fabricating companies in this district, but investigation discloses that it was for the purpose of protection against a possible order for fabricated steel. A Shenango Valley boiler maker is reported to be seeking a round tonnage, but in general the demand is slow and orders few. Some independents now are asking 2.25c., Pittsburgh, but this price seems impossible with others willing to take less.

We quote sheared plates of tank quality ¼ in. and heavier at 2c. to 2.65c., Pittsburgh.

**Steel Rails.**—Demand for light rails is moderate and entirely for small tonnages, and is coming almost solely from coal companies. There are more makers than buyers and consequently prices favor the latter.

We quote 25 to 45-lb. sections, rolled from new steel, 2.35c. to 2.75c.; rolled from old rails, 2.25c.; standard rails, \$45, mill, for Bessemer, and \$47 for open-hearth sections.

**Iron and Steel Pipe.**—Makers of both steel and wrought iron pipe are gaging operations closely by orders and this is reflected in a somewhat lighter scale of activities than was the case recently. Only four of the 17 pipe furnaces in the Mahoning Valley are in operation this week, while in the Wheeling district all of the 16 furnaces are idle. The National Tube Co. has adjusted its working schedules at most of its plants, in keeping with a smaller and less pressing order book. Pittsburgh independents are running about 60 per cent capacity. Reports from the jobbing trade are of an improved demand and some reduction in stocks. While this has resulted in somewhat heavier demand upon manufacturers, there are so many intimations of lower prices that jobbers are disposed to pursue a conservative course in the matter of replacement orders. (Discounts are given on page 879.)



**Sheets.**—Outside of the demand from the automobile industry, business does not show any appreciable improvement. Possibly the pressure for business on the part of independents is not quite as heavy as it was recently, and it is noted that some of them have advanced their asking prices, but at the same time really desirable business could be placed as low now as at any time recently. Operations of the industry for the first half of March, including both independents and American Sheet & Tin Plate Co., were about 30 per cent of capacity. The present average is not greatly higher despite the gain in active mills in the past week. Prices are given on page 879.

**Tin Plate.**—The tendency of buyers still is to take supplies as they are needed, and while current requirements are sufficient to keep the industry as a whole running close to 50 per cent of capacity, there is not the certainty to plant operations there would be if consumers were ordering ahead as usual. On production plate, \$7 per base box still is recognized and well observed. Stock items, however, are selling at \$6.50 and even less from mills which had rather heavy accumulation.

**Hoops and Bands.**—No improvement is noted in the demand and prices are uncertain, at least as far as the independents are concerned. A quotation of 2.80c. is being made by the latter, but they would go lower to secure a sizable order. The Steel Corporation price is 3.05c.

**Cotton Ties.**—No very definite idea still is possible to form of the size of this year's cotton crop and plans of makers of cotton ties are suspended until they have something tangible to work on. Indications are that the acreage in cotton will be materially reduced this year and that the tie requirements will be much smaller than they were last year. Prices will be determined as usual on the base of hoops, when the season opens.

**Cold-Finished Steel Bars.**—Increased operations by a number of the automobile manufacturers have resulted in a fair number of releases against old orders, and have brought in a few orders, but general business still falls short of the producing capacity of the country. The increase in automobile plant activities does not create much optimism among makers of cold-finished steel bars in this district, for it is thoroughly appreciated that most of the automobile manufacturers are carrying large stocks and until these are used up or nearly so, expectations are not strong for new purchases of any considerable size. The Cumberland Steel Co. has announced a revision of its prices, now quoting \$3.50 per 100-lb. base in carload lots, as compared with its previous quotation of \$3.85. The product of this company is regarded as a specialty and usually commands a premium over cold-rolled or drawn steel bars and shafting. Some makers have made no formal reduction from the old base of 3.60c., but a range of from 3c. to 3.25c. is more representative of today's price possibilities.

**Hot-Rolled and Cold-Rolled Strips.**—Although the American Steel & Wire Co. still is holding cold-rolled strips at 6.25c., base, and the Steel Corporation price on hot-rolled strips is 3.05c., these prices are well above what could be done today. On cold-rolled strips, 6c. measures the maximum and sales have been done as low as 5.65c. On hot-rolled strips, the full range is from 2.80c. to 3.05c., but sales above 3c. are few and small. New business does not increase much, but increased operations by several of the automobile manufacturers have brought in a fair number of releases against suspended orders.

**Nuts, Bolts and Rivets.**—Makers in this district, running for the most part on the requirements of the railroads, have not benefited by the somewhat enlarged operations of the automobile industry. Buyers continue to take hold in a hand to mouth way and not a little of the current production of plants in this district is going into stock. No special change is noted in price, but the market must be said to favor buyers. Prices and discounts are given on page 879.

**Spikes.**—Demand for both large and small spikes is slow to the point of stagnation. The railroads seem

disinclined to seek supplies until better off financially and the coal market is at such a low point both as regards business and prices that there is not as strong a tendency toward development, which means less laying of mine track. Prices are not especially well defined in the lack of important sales. Prices are given on page 879.

**Cut Nails.**—The Wheeling Steel Products Co. is quoting 3.75c. base, Wheeling, for carload lots and 4c. for less than carload. The Reading Iron Co. has made no change in its price, still quoting 4c. Birdsboro and Pittstown for carload lots. Both companies report the demand slow.

**Old Material.**—Prices continue to seek lower levels, due to the fact that few of the steel manufacturers are showing any interest in the market, and since the dealers who have yards see no immediate prospect of an improvement in business, they naturally are reducing their bids against material for laying down on their yards. Heavy melting steel has been offered at \$13.50 per gross ton delivered and with this grade available that low, dealers' price ideas on other open-hearth grades have been revised downward to maintain the usual differentials. The Pennsylvania Railroad, Eastern region, is asking bids, which must be in by 9 a. m., April 5, on 13,905 short tons of old material. The largest items in the list are 1700 tons of No. 1 heavy melting steel and 1100 tons each of No. 1 and No. 2 wrought scrap.

We quote for delivery to consumers' mills in the Pittsburgh and other districts taking the Pittsburgh freight rate, as follows:

Heavy melting steel, Steubenville, Follansbee, Brackenridge, Monessen, Midland and Pittsburgh.....	\$13.50 to \$14.00
No. 1 cupola cast.....	20.00 to 20.50
Rerolling rails, Newark and Cambridge, O.; Cumberland, Md.; Huntington, W. Va.; Franklin, Pa., and Pittsburgh.....	16.00 to 16.50
Compressed sheet steel.....	11.50 to 12.00
Bundled sheet sides and ends, f.o.b. consumers' mills, Pittsburgh district.....	9.50 to 10.00
Railroad knuckles and couplers.....	14.50 to 15.00
Railroad coil and leaf springs.....	14.50 to 15.00
Railroad grate bars.....	13.00 to 13.50
Low phosphorus melting stock, bloom and billet ends, heavy plates, ¼-in. and heavier.....	20.00 to 21.00
Railroad malleable.....	13.50 to 14.00
Iron car axles.....	32.00 to 33.00
Locomotive axles, steel.....	28.00 to 29.00
Steel car axles.....	17.50 to 18.00
Cast iron wheels.....	17.00 to 18.00
Rolled steel wheels.....	14.50 to 15.00
Machine shop turnings.....	9.00 to 9.50
Sheet bar crop ends at origin.....	14.00 to 15.00
Heavy steel axle turnings.....	11.50 to 12.00
Short shoveling turnings.....	10.00 to 10.50
Heavy breakable cast.....	15.50 to 16.00
Stove plate.....	13.00 to 13.50
Cast iron borings.....	10.50 to 11.00
No. 1 railroad wrought.....	14.50 to 15.00

**Coke.**—Practically no market exists at the moment in coke. With so few of the furnaces ordinarily served from the Connellsville district in blast, the movement against contracts is almost nil and spot demands are being easily met from the lowest operations and the smallest production in a great many years. In the week ended March 19, only 7389 out of a total of 35,542, ovens were in operation and the production of coke was only 68,500 tons. This is at the annual rate of only 3,562,000 tons. Small as is the output of the ovens, it is sufficient for wants, as is evident from a further softening in prices of spot tonnages. While some operators still are asking \$4.50 per net ton, oven, for furnace grade, \$4.25 seems to be top on actual sales and \$4 is finding more basis in sales of standard coke than was the case recently. One large producer is quoting \$6.50 against demands for spot foundry coke, but this price is extreme, as others are quoting \$6, this being the price of a well-known and reputable brand, while small operators without regular consuming connections have gone as low as \$5 to secure orders. The coal market still is marking time. Production is so low that spot offerings have decreased, but they still are quite sufficient for demands and it is impossible to record any advance in prices. On mine run steam coal, no trouble is experienced in picking

up tonnages at \$2 to \$2.25 per net ton, mines, and since there is more demand for steam than gas or by-product coal at the moment, the latter grades are not salable at much of a premium above steam grade. A good many inquiries are coming out for tonnages for shipment over the year beginning April 1, but the negotiations have not yet resulted in much business. To-day buyers would not have much trouble in contracting for the year at \$2.75 for mine run steam coal and about \$3 for mine run gas and by-product coal, but these prices they regard as higher than they will be called upon to pay later in view of the probability of a cut in wages in the non-union fields, which might well force a cut in the union fields if operators in the latter wanted to share in passing business.

## JAPAN BUYS BLACK SHEETS

### Increased Dealer Activity—East Indies Affected by Low Price on Own Products

NEW YORK, March 28.—Bids on the 60 miles of 100-lb. rails totaling about 9000 tons, A. R. A. specifications, inquired for by the Manchurian Railroad, closed March 28. The bidding is reported to have been close and the original quotation of one of the bidders reduced by about \$3 per ton after bids were submitted.

Considerable activity is noted among dealers in Japan in purchasing black sheets of light gage. One order was recently booked for a Japanese house for about 1500 tons of light gage black sheets and was placed with an American mill at a good price. Another exporter dealing with Japan reports a total in the past two weeks of more than 1300 tons of black sheets sold mostly to dealers, and states that during this time it has closed out its entire stock in Japan, consisting of about 300 tons of bars and about 50 tons of blue annealed sheets. Additional inquiries have been received by this company for about 500 tons of No. 30 gage black sheets. Some ship plate orders and inquiries are also coming through from Japan. It is also reported that the banks in Japan are issuing letters of credit with greater freedom.

According to reports from the continent, Germany is finding a good market at present in the Mediterranean districts, sales of German mills to the Far East being mostly restricted to purchases of special material for which Germany is the best source of supply. The collapse in the price of sugar and rubber gum has evidently affected purchasing from the Dutch East Indies temporarily; few inquiries are received from individual buyers and government purchasing, according to the purchasing agent for the Colonial Government, has almost ceased during the past two months.

### Meeting of Export Round Table

At a meeting of the Boston Export Round Table at the City Club in Boston, March 25, R. S. MacElwee, director of the Bureau of Foreign and Domestic Commerce, strongly urged manufacturing concerns financially able to do so, to maintain at least a skeleton sales force in countries abroad to cement trade relations and to study economic conditions, so that when international trade resumes we will be on the ground and best prepared to supply wants of the buyers. He warned manufacturers against exports to South American ports, owing to congestion of freight on wharves there and pointed out that while Japan is no longer a sellers' market, the purchasing power of that country has increased.

Among others who spoke at the meeting were Herbert E. Cushman, treasurer Morse Twist Drill & Machine Co., New Bedford, Mass., whose subject was the "Golden Rule of Exporting"; Ernest B. Filsinger, export manager Lawrence Co., Boston, who talked on "How to Export Your Salesmen," and Thomas W. Pelham, sales director Gillette Safety Razor Co., Boston, whose address was entitled "Can Europe Buy American Goods in 1921?"

## Chicago

CHICAGO, March 29.

The Santa Fe has bought 1300 gondola cars, which will require 13,000 tons of steel. Orders for the material have not yet been placed with the mills, but the figures at which the cars were placed would indicate that steel is expected to be bought at better than present ruling quotations. That the competition for these cars brought out extremely close figuring is not surprising in view of the dearth of orders for rolling stock by the railroads. With their traffic much diminished and their costs high, the carriers are in an unenviable position. The general manager of a large trunk line is authority for the statement that it is costing his road \$1.10 to earn \$1. By many competent observers this is regarded as an extremely conservative estimate of the situation confronting the rail lines to-day. Blocked in their efforts to reduce costs by adjusting wages and working conditions, the railroads are closing shops and laying off men. Repair work is being postponed indefinitely, and as a result the number of bad order cars on siding is rapidly increasing. On Feb. 26 there were 14,200 cars in bad order in the Chicago switching district, of which 7966 needed heavy repairs and 6234 required light repairs. On March 12 the number of unserviceable cars had been increased to 14,901, of which 8322 required heavy repairs and 6579 light repairs.

A statement given out by the chief engineer of the Chicago Union Station Co. to-day indicates that the successful bid on the mail terminal building, the letting of which was announced in this column last week, was under \$74 a ton delivered. It is felt by those identified with the building industry that both plain material and fabricating costs are now sufficiently low to attract investors and the only remaining obstacle to a revival in construction work is high wages. It is notable that numerous small building projects which do not involve a large individual investment are already under way.

Reports from automobile production centers indicate that operations continue to improve. The Ford Motor Co. is now turning out 3000 cars a day six days a week, and other plants are working back toward normal output. Because of large material stocks on hand, however, steel mills will not feel the effects of the revival of this industry for some time.

Concurrently with the increasing operations of automobile factories, farm implement plants are reducing output and in some cases shutting down.

The demand for cast iron pipe is of encouraging proportions, and is reflected in improved shop operations. Two large pipe plants in the Birmingham district are now running practically full force six days a week.

Blast furnace and steel mill output in this district has been further reduced. Two additional blast furnaces have been blown out, one by the Iroquois plant, leaving only one out of five stacks active, and one by the Illinois Steel Co., leaving 11 furnaces on iron and one on ferromanganese out of that producer's 29 stacks.

The latter's steel output has also been curtailed, now being at the rate of 41 per cent of ingot capacity. Independent mill operations are on about the same basis as last week.

The price situation is practically unchanged except in pig iron and scrap, which have shown further weakness. The minimum independent quotation on plates, shapes and bars remains at 2c., Pittsburgh, although on an exceptionally attractive tonnage such as that involved in the cars bought by the Santa Fe, concessions would not be surprising.

**Pig Iron.**—The market still lacks stability, but the downward trend of prices is less marked than heretofore, possibly because producers are getting down to bed rock costs. Current transactions show rather wide disparity between prices on small purchases and those which producers are willing to name on large tonnages. An Illinois car builder bought 500 tons of foundry at \$26, delivered, or \$23.34 base, Chicago furnace, while a Wisconsin melter purchased 2000 tons at \$24, delivered,



for No. 2. The latter is understood to have been bought from a Wisconsin furnace. As against these transactions, smaller tonnages are being sold at a minimum of \$25 base, local furnace. An Illinois melter has closed for 100 tons of malleable at \$25, Chicago furnace. The market remains generally quiet and merchant iron production in this district has been further curtailed through the blowing out of an additional furnace by the Iroquois plant. Of the furnaces represented by the leading local merchant, only three remain active out of 10, not including the idle Mark stack, the output of which is generally used by the Mark pipe mills. Foundry operations in this territory continue at a low rate, but the outlook is better in Michigan because of the revival of the automobile industry. The effect thus far has been confined to the release of finished castings on which delivery had been held up, but new work is expected to develop in due time.

The following quotations are for iron delivered at consumers' yards, except those for Northern foundry, malleable and steel-making irons, including low phosphorus, which are f.o.b. furnace and do not include a switching charge averaging 70c. per ton:

Lake Superior charcoal, averaging sil.	
1.50, delivered at Chicago.....	\$38.50
Northern coke, No. 1 sil. 2.25 to 2.75.....	26.25
Northern coke foundry, No. 2, sil.	
1.75 to 2.25.....	25.00
Northern high phos.....	25.00
Southern coke, No. 1 foundry and No.	
1 soft, sil. 2.75 to 3.25.....	34.67
Southern coke, No. 2 foundry, sil.	
2.25 to 2.75.....	32.92
Southern foundry, sil. 1.75 to 2.25.....	31.67
Malleable, not over 2.25 sil.....	25.00
Basic.....	25.00
Low phos. Eastern furnace (copper	
free).....	37.50
Silvery, sil. 8 per cent.....	40.00

**Ferroalloys.**—The ferroalloys are inactive.

We quote 75 to 80 per cent ferromanganese, \$90 to \$95 delivered; 50 per cent ferrosilicon, \$90 to \$95 delivered; spiegel-eisen, 18 to 22 per cent, \$40 to \$42 delivered.

**Plates.**—The Santa Fe has bought 1000 gondola cars from the American Car & Foundry Co. and 300 from the Haskell & Barker Car Co. The steel for the cars has not yet been placed. The only other inquiry involving a large tonnage of plates calls for 1500 tons for an oil storage tank. The small volume of current demand is indicated by the fact that most of the plate rolling capacity of the country is idle. The price situation remains unchanged. On attractive tonnages independents are quoting 2c. to 2.10c., Pittsburgh. On plates, as on other steel products, prices are unstable, actual quotations varying according to the necessities of mills, specifications and deliveries.

The mill quotation is 2c. to 2.65c., Pittsburgh, the freight to Chicago being 38c. per 100 lb. Jobbers quote 3.23c. for plates out of stock.

**Sheets.**—Buying has increased during the past week, coming from diverse sources. Jobbers are commencing to replenish their stocks and the seasonal demand for sheets for roofing, conductor pipe, eaves trough and like products is making itself felt. Metal barrel and culvert manufacturers are buying, and automobile manufacturers continue to release some tonnage for rolling. There is also some buying of tank sheets and the Far East is still canvassing the market for light sheets. Ruling independent quotations are 3c., 4c., and 5c., base Pittsburgh, respectively on blue annealed, black and galvanized, but as low as 2.65c., 3.65c. and 4.60c. respectively have been named.

Mill quotations are 4c. to 4.35c. for No. 28 black; 3c. to 3.55c. for No. 10 blue annealed, and 5c. to 5.70c. for No. 28 galvanized, these all being Pittsburgh prices, subject to a freight to Chicago of 38c. per 100 lb.

Jobbers quote: Chicago delivery out of stocks, No. 10 blue annealed, 4.13c.; No. 28 black, 5.40c.; No. 28 galvanized, 6.10c.

**Structural Material.**—Mills report that each month this year has shown an increase in structural business, but even yet current bookings fall far short of normal. It is notable that small building projects are numerous, while larger work is being held up pending a reduction in labor costs. Independent mill quotations for plain material range from 2c. to 2.10c., Pittsburgh, on desirable tonnages. Green Bay, Wis., has retained the Strauss Basculle Bridge Co., Chicago, as architect and engineer for a new Main Street bridge over the Fox River to cost \$500,000, bids on which will be called for the last of April. The Corn Products Refining Co. is asking for figures on two additional plant structures

at Kansas City, one of which will involve about 150 tons. A. M. Castle & Co. will let a general contract for a local warehouse, requiring 450 tons, the fabrication of which will be sublet.

Recent lettings include:

Freight shed for port of New Orleans, 342 tons, to St. Louis Structural Steel Co.

J. I. Case Threshing Machine Co., warehouse, St. Louis, 277 tons, to Kenwood Bridge Co.

Valley Camp Coal Co., coal handling bridge, Duluth, 584 tons, to unnamed fabricator.

University of Washington, mines laboratory building Seattle, 124 tons, to Western Structural Steel & Tank Co., Portland.

Western States Portland Cement Co., Independence, Kan., locomotive sheds and power house, 100 tons, to the Worden-Allen Co.

Steel deck trusses for Myrtle Creek bridge, Umpqua River, Douglas County, Oregon, 226 tons, concrete construction, substituted for fabricated steel.

The mill quotation is 2.10c. to 2.45c., Pittsburgh, which takes a freight rate of 38c. per 100 lb. for Chicago delivery. Jobbers quote 3.23c. for materials out of warehouse.

**Warehouse Prices.**—The leading local independent warehouses, Joseph T. Ryerson & Son., A. M. Castle & Co. and the Jones & Laughlin Steel Co., have announced general price reductions. Mild steel bars have been cut from 3.48c. per lb. local warehouse to 3.13c., plates from 3.78c. to 3.23c., structural shapes from 3.58c. to 3.23c., No. 10 blue annealed sheets from 4.68c. to 4.13c., No. 28 gage black sheets from 5.75c. to 5.40c., No. 28 gage galvanized from 7.10c. to 6.40c., structural rivets from 5.08c. to 4.88c., boiler rivets from 5.18c. to 4.98c. Cold-rolled steel bars have been reduced from 5.25c. for rounds and 5.75c. for flats, squares and hexagons to 4.63c., which applies on all shapes, the former extra of \$10 a ton for shape having been eliminated. Wire and wire nails have been lowered 10c. per 100 lb., the new quotations being 4.28c. for bright basic No. 12 gage and heavier and for black annealed wire, 4.68c. for bright basic No. 13 gage and lighter, \$4 a keg for common wire nails, \$3.35 for cement coated nails. Low carbon billets have been reduced from 3.51½c. to 2.90c. Tank rivets in keg lots are now quoted at 55 off, and in less than keg lots at 50 off.

**Wire Products.**—Mills note a slight increase in business, which is no doubt a reflection of the seasonal needs of the country. Of the various wire products, barbed wire and nails are most sought after. Aggregate bookings, however, are still far below normal. Independents continue to quote \$3.25, Pittsburgh, on wire nails and \$3 on plain wire, although as low as \$2.75 is regarded as possible on an attractive order for wire. For mill prices, see finished iron and steel, f.o.b. Pittsburgh, page 879.

**Rails and Track Supplies.**—Specifications against rail and track fastening contracts are being received in volume, and local rolling capacity is operating full. The March output of the Gary rail mill is expected to break all previous records. New demand for track supplies is very light. Iron tie plates have weakened and are quoted at from \$58 to \$60 a ton, mill.

Standard Bessemer rails, \$45; open-hearth rails, \$47; light rails, 2.75c. f.o.b. makers' mills.

Standard railroad spikes, 3.65c., Pittsburgh. Track bolts with square nuts, 4.60c., Pittsburgh. Steel tie plates, 3c., and steel angle bars, 2.75c., Pittsburgh and Chicago; tie plates, iron, 2.90c. to 3c., f.o.b. makers' mills.

**Bolts and Nuts.**—The market remains quiet and shading is general. While makers are still nominally on the price basis published on page 879, bolts are rather generally quoted f.o.b. Chicago instead of f.o.b. Pittsburgh, and large concessions on hot-pressed and cold-punched nuts are being made. Hot-pressed blank nuts have been quoted at all the way from \$4.25 to \$4.75 off list, hot-pressed tapped nuts from \$4 to \$4.50 off, cold-punched blank at from \$3.25 to \$4 off and cold-punched tapped at from \$3 to \$3.75. These are rather extreme examples, but indicate the wide variance in the prices which makers are quoting.

Jobbers quote structural rivets, 4.88c.; boiler rivets, 4.95c.; machine bolts up to ¾ x 4 in., 50 per cent off; larger sizes, 45 off; carriage bolts up to ¾ x 6 in., 40 off; larger sizes, 40 off; hot pressed nuts, square and hexagon tapped, \$1.60 off; blank nuts, \$1.85 off; coach or lag screws, gimlet points, square heads, 50 and 5 per cent off. Quantity extras are unchanged.



**Bars.**—Automobile plants continue to release small tonnages of bars, but business from this source is largely prospective, as most car makers have large inventories to dispose of. That at least a moderate spring demand for automobiles is developing is indicated by the increasing operations of the factories. Generally speaking, the demand for bars is small and independent quotations of soft steel are rather firmly established at minimum of 2c., Pittsburgh. Buying of bar iron and rail-carbon steel bars is light and ruling quotations appear to be 2.60c., Chicago, on the former product and 2.25c., mill, on the latter.

Mill prices are: Mild steel bars, 2c. to 2.35c., Pittsburgh, taking a freight of 38c. per 100 lb.; common bar iron, 2.60c., Chicago; rail carbon, 2.25c. mill.

Jobbers quote 3.13c. for steel bars out of warehouse. The warehouse quotation on cold rolled steel bars is 4.63c., an extra of 15c. per 100 lb. applying to orders exceeding 1000 lb. and under 2000 lb. and an extra 35c. on orders up to 1000 lb. Jobbers quote hard and medium deformed steel bars at 2.73c. to 3c. base.

**Cast Iron Pipe.**—The Lynchburgh Foundry Co. is low bidder on 1450 tons of 6-in. to 12-in. class C water pipe for Milwaukee with a price of \$64.065 f.o.b. Milwaukee, or \$54.20, Birmingham. In view of the size of the tonnage it is notable that the concession under the ruling market quotations was small. The American Cast Iron Pipe Co. is low bidder on 50 tons of special castings for the same city and the R. D. Wood Co. named the lowest figure on 100 fire hydrants. Detroit, which had been figuring on 2800 tons, has bought steel pipe. Business is, on the whole, encouraging, as indicated by the fact that two new large inquiries, one for 3000 tons and the other for 1100 tons, are expected to come to a head next week. Fort Wayne, Ind., has let 250 tons to the American Cast Iron Pipe Co., Dunlap, Iowa, has awarded 175 tons to a contractor who has not yet sublet. Inquiries include:

St. Paul, Minn., 200 tons, bids to be opened March 28.

Saginaw, Mich., 600 tons, April 5.

Topeka, Kan., 225 tons, March 30.

We quote per net ton f.o.b. Chicago, ex-war tax as follows: Water pipe, 4-in., \$69.10; 6-in. and above, \$64.10; class A and gas pipe, \$4 extra.

**Old Material.**—Prices on most grades have again dropped from 50c. to \$1 a ton. Buying is at a standstill, both sellers and users being inactive. Railroad lists are also less numerous, indicating that present prices are not attractive to carriers. The Pennsylvania Northwestern region offers 2500 tons, including 400 tons of cast-iron wheels and the Lake Erie & Western and the New York Central blind lists. George W. Jennings, Inc., car wrecker, is advertising 700 tons from his Detroit plant.

We quote delivery in consumers' yards Chicago and vicinity, all freight and transfer charges paid, as follows:

Per Gross Ton	
Iron rails .....	\$17.50 to \$18.00
Relaying rails .....	32.50 to 37.50
Car wheels .....	14.00 to 14.50
Steel rails, rerolling .....	12.50 to 13.00
Steel rails, less than 3 ft. ....	12.50 to 13.00
Heavy melting steel .....	11.00 to 11.50
Frogs, switches and guards, cut apart ..	11.00 to 11.50
Shoveling steel .....	10.50 to 11.00
Low phos. heavy melting steel .....	13.50 to 14.00
Drop forge flashings .....	7.50 to 8.00
Hydraulic compressed sheet .....	9.00 to 9.50
Axle turnings .....	8.00 to 8.50
Per Net Ton	
Iron angles and splice bars .....	15.50 to 16.00
Steel angle bars .....	10.50 to 11.00
Iron arch bars and transoms .....	15.50 to 16.00
Iron car axles .....	24.50 to 25.00
Steel car axles .....	14.00 to 14.50
No. 1 busheling .....	10.00 to 10.50
No. 2 busheling .....	7.50 to 8.00
Cut forge .....	10.00 to 10.50
Pipes and flues .....	7.50 to 8.00
No. 1 railroad wrought .....	10.50 to 11.00
No. 2 railroad wrought .....	10.00 to 10.50
Steel knuckles and couplers .....	11.00 to 11.50
Coil springs .....	12.00 to 12.50
No. 1 cast .....	13.50 to 14.00
Low phos. punchings .....	11.00 to 11.50
Locomotive tires, smooth .....	10.00 to 10.50
Machine shop turnings .....	5.50 to 6.00
Cast borings .....	6.50 to 7.00
Stove plate .....	14.00 to 14.50
Grate bars .....	10.50 to 11.00
Brake shoes .....	10.50 to 11.00
Railroad malleable .....	12.00 to 12.50
Agricultural malleable .....	12.00 to 12.50
Country mixed .....	8.50 to 9.00

## New York

NEW YORK, March 29.

**Pig Iron.**—An increasing number of melters who have long refrained from buying are being compelled to come into the market and are placing orders for early delivery. This does not mean that there is heavy buying, but some improvement over recent extreme dullness can be noted. One central Pennsylvania furnace within a week or 10 days has sold about 1500 tons of foundry iron divided among a number of customers and the price is understood to have been up to the usual recent quotation, averaging perhaps \$26 or \$26.50, furnace. A sale of 2000 tons of basic made about two weeks ago, but not reported at the time, was at \$25, furnace. Stocks of pig iron in the yards of furnaces which are identified with the Eastern Pig Iron Association amounted to about 130,000 tons March 1, and it is probable that the tonnage on hand April 1 will slightly exceed that amount, but this is due to the fact that steel companies have been sellers of iron and this has necessitated some piling by the merchant furnaces. It is believed that the demand has been more than equal to the production of the merchant stacks. Four furnaces in the association have been blown out during the month and it is expected that only five will be in operation April 1. Owing to the greatly reduced production and the slight improvement in demand, furnace operators do not expect prices to go much, if any, lower.

We quote delivered in the New York district as follows, having added to furnace prices \$2.52 freight from eastern Pennsylvania, \$5.46 from Buffalo and \$6.16 from Virginia:

East. Pa. No. 1 fdy., sil.	2.75 to 3.25.	\$29.52 to \$30.52
East. Pa. No. 2X fdy., sil.	2.25 to 2.75.	28.52 to 29.52
East. Pa. No. 2 fdy., sil.	1.75 to 2.25.	27.52 to 28.52
Buffalo, sil.	1.75 to 2.25.	32.46 to 33.46
No. 2 Virginia, sil.	1.75 to 2.25.	33.16 to 34.16

**Cast-Iron Pipe.**—Prices are holding firm and business is fairly satisfactory. The city of Syracuse, N. Y., placed its order for 600 tons with the Central Foundry Co., New York. We quote on small lots, f.o.b. New York, as follows: 6-in. and larger, \$63.30; 4-in., \$73.30; 3-in., \$83.30, with \$4 additional for Class A and gas pipe.

**Warehouse Business.**—The market is dull with about the same amount of business transacted as usual for the present period. Sheets are still being quoted over a wide range of prices, some sales of galvanized being reported at as low as 5.75c. per lb. base and up to 6.50c. per lb. base. Black sheets with a number of warehouses are off another 25c. per 100 lb., bringing No. 28 gage to 5c. per lb. Warehouses carrying tire steel are now quoting 3.58c. per lb. for iron finish and 3.78c. per lb. for smooth finish. The brass and copper market is unchanged with very little buying reported and prospect of several copper mines suspending because of the present market. It is reported that copper bringing 12c. per lb. at the mine costs 14c. per lb. to produce. The pipe market continues dull. We quote prices on page 894.

**Ferromanganese.**—Demand for both ferromanganese and spiegeleisen is confined to carload lots. There have been sales of a few carloads here and there at around \$90, delivered, which appears to be the price of the American producers. The quotation of British makers is still \$100, seaboard, but it is acknowledged that any fair test of the market would bring a price equivalent to \$90, delivered, which would be about \$85, seaboard. The spiegeleisen market is reported to be stronger in that bids at less than \$36, furnace, have been refused in a few cases. The price seems to depend, however, upon the seller in each case, but there has been no general test of this market. Manganese ore has been offered at under 30c. per unit, seaboard, and it is probable that an order of a substantial amount will result at a marked concession from the general quotation of 30c. to 35c. per unit, which ruled recently. The 50 per cent ferro-silicon market is lower at \$90 to \$95 per ton, delivered. The United States Navy is taking bids on 200 tons for delivery this year, but demand is otherwise very light.

**High-Speed Steel.**—The market is dull with few

transactions reported and prices on 18 per cent tungsten high-speed steel nominally \$1 to \$1.10 per lb.

**Finished Iron and Steel.**—A slight improvement in orders for steel, both as to numbers and aggregate tonnage, probably indicates nothing more than that consumers are reaching the bottom of their stocks and are replenishing on a hand-to-mouth basis. Sentiment grows that a solid foundation for a revival of business will not have been reached until the readjustment of railroad wages has been thoroughly worked out. The price situation is unchanged, except that there is more direct evidence of reported sales of bars below 2c., Pittsburgh. One mill has quoted 1.90c., Pittsburgh, on a number of inquiries, but this price is given only when the specifications are not too rigid and the quantity is of attractive size. A carload inquiry would bring out 2c. quotations and less than carloads probably cannot be had for less than 2.10c., Pittsburgh. A car company is expected to place 800 tons of plates, shapes and bars this week. Plate inquiries are very scarce. Both plates and structural shapes are obtainable at 2c., Pittsburgh, and there are indications that a good-sized inquiry would bring out even lower prices, especially on plates. Bar iron remains at 2.10c., Pittsburgh, with light demand. In view of the dearth of apartment house construction in New York, it is of interest that one project, involving 800 tons, is now in the market and it is predicted that builders will now turn to apartment house construction because of the large amount of office building space that cannot be rented. An office building for Syracuse, N. Y., requiring 1000 tons, is up for bids; also a Masonic Temple at Columbia, S. C., 250 tons, and Government work at Pearl Harbor, Honolulu, 250 tons. The Phoenix Iron Works was awarded a 100-ton bridge for the Central Railroad of New Jersey and a pier at Camden, N. J., 350 tons, was awarded to the Lehigh Structural Steel Co. The Levering & Garrigues Co. will build an 800-ton structure for a Hartford department store and 450 tons for the Fifth Avenue Baptist Church. The National Bridge Co. has a contract for the Jamaica, L. I., branch of the Bank of Manhattan, 800 tons, and 200 tons has been closed for the Roosevelt Memorial Home.

We quote for mill shipments, New York, as follows: Soft steel bars, plates and structural shapes, 2.38c. for largest lots, except from the United States Steel Corporation, which is asking 2.35c., 2.65c., and 2.45c., Pittsburgh, respectively; bar iron, flats, wider than 6 in., 2.98c., with half extras; light rounds, squares and flats, 3.48c., with full extras, and other sizes, 2.48c., with half extras.

**Old Material.**—Chief activity has been in turnings, but these have suffered a decline of \$1, \$9 delivered Phoenixville being about the best price obtainable. Brokers generally are not inquiring for heavy melting steel from dealers and dealers who have canvassed mills have been offered no more than \$8, f.o.b. cars, Brooklyn.

Buying prices per gross ton, New York, follow:

Heavy melting steel	\$8.00 to \$8.50
Rerolling rails	10.00 to 11.00
Relaying rails, nominal	40.00 to 42.50
Steel car axles	11.00 to 12.00
Iron car axles	27.00 to 28.00
No. 1 railroad wrought	11.50 to 12.50
Wrought iron track	8.00 to 9.00
Forge fire	7.00 to 7.50
No. 1 yard wrought, long	10.50 to 11.00
Light iron	4.00 to 5.00
Cast borings (clean)	5.00 to 6.00
Machine-shop turnings	4.50 to 5.00
Mixed borings and turnings	4.50 to 5.00
Iron and steel pipe (1 in. diam., not under 2 ft. long)	9.00 to 10.00
Stove plate	12.00 to 13.00
Locomotive grate bars	10.00 to 11.00
Malleable cast (railroad)	11.00 to 12.00
Old car wheels	12.00 to 13.00

Prices which dealers in New York and Brooklyn are quoting to local foundries, per gross ton:

No. 1 machinery cast	\$18.00 to \$19.00
No. 1 heavy cast (columns, building materials, etc.), cupola size	17.00 to 18.00
No. 1 heavy cast, not cupola size	13.00 to 14.00
No. 2 cast (radiators, cast boilers, etc.)	13.00 to 14.00

### Registration of Foundry Patterns

A very useful system of conservation and registration of foundry patterns, calculated to save material and time and to facilitate the work of a foundry, is contributed by Hermann Heydenreich to the German foundry journal, *Giesserei-Zeitung*, June 1, 1920.

## Cincinnati

CINCINNATI, March 29.

**Pig Iron.**—There is very little activity, and the few sales being made are chiefly for carload lots, with an occasional transaction involving 100 to 200 tons. An Indiana melter bought 200 tons of Northern No. 1 iron from a Chicago district producer at \$26.50, furnace. A local melter took 100 tons of Southern resale iron at a price slightly under \$25, Birmingham, and is in the market for 100 tons of Northern foundry, on which he has been quoted \$25, Valley basis. The American Radiator Co. is reported to have purchased 250 tons at \$25, Birmingham. The same company is reported to have purchased 750 tons for its Detroit plant. It is said that a quotation of \$25.75, delivered, was made on this iron, but as it was not accepted, the inference is that resale iron at a lower price was purchased. Five hundred tons of malleable for an Illinois car manufacturer is reported to have been taken by the new producer at Granite City. Several carload inquiries for alloys are being figured on and a few sales reported, among them being a carload of spiegeleisen at \$33, furnace, and a carload of ferromanganese at around \$95, delivered. Encouraging reports from foundries catering to the automotive industry continue to be received but jobbing and stove foundries report very little change in conditions.

Based on freight rates of \$4.50 from Birmingham and \$2.52 from Ironton, we quote f.o.b. Cincinnati:

Southern coke, sil. 1.75 to 2.25 (base)	\$29.50
Southern coke, sil. 2.25 to 2.75 (No. 2 soft)	30.75
Ohio silvery, 8 per cent sil.	42.52
Southern Ohio coke, sil. 1.75 to 2.25 (No. 2)	29.52
Basic, Northern	27.52
Malleable	29.52

**Finished Material.**—Rumors of low prices on finished material continue to be heard, and well-defined reports of 1.90c. on plates, 1.95c. on bars, 3.75c. on black sheets and 4.75c. on galvanized sheets are current. There is little doubt that these prices can be done on attractive tonnages, but the business now being booked, consisting as it does of carloads and less than carloads, is generally placed at around \$5 a ton over these minimum prices. The sheet market continues dull, though additional releases of suspended tonnages by automobile companies are being received. This is one of the bright spots of the trade right now. Several orders, aggregating 300 to 400 tons, of finished material, including bars, shapes and plates, are reported by one of the larger independents, but the general trend of orders is for small lots for immediate shipment. The structural field is the most active branch of the industry, and some sizable awards were reported during the week. The Fort Pitt Bridge Co. has been awarded the steel work on the 16-story National City Bank office building at Indianapolis. The Louisville Bridge & Iron Co. will fabricate the steel for the new Merchants' and Manufacturers' Building at the Kentucky State Fair grounds. The Mt. Vernon Bridge Co. has been awarded the steel for a railroad bridge for the L. & N. Railroad over the Alabama River, involving about 1350 tons, and the Virginia Bridge & Iron Co. for one over Miller's Creek on the same road. The Virginia company will supply the steel for the draw span of the former bridge, the total tonnage being about 450 tons.

**Warehouse Business.**—Local warehouses are meeting keen competition from mills and resale materials, and as a result business is quiet. Small orders for immediate shipment are still being received, but the aggregate tonnage is small. Prices are unchanged.

Iron and steel bars, 3.58c. base; shapes, 3.68c. base; hoops and bands, 3/16 in. and lighter, 4.28c.; plates, 3.88c. base; reinforcing bars, 3.65c.; cold-rolled rounds, 1 1/2 in. and over, 5.20c.; under 1 1/2 in. rounds, flats, squares and hexagons, 5.70c.; No. 10 blue annealed sheets, 4.78c. base; 28-gage black sheets, 6c. base; 28-gage galvanized sheets, 7c. base; wire nails, \$3.75 per keg, base.

**Tool Steel.**—One of the larger producers of high speed steel has further reduced its price, the cut amounting to 5c. a lb., and 18 per cent tungsten high speed steel is now generally quoted at \$1.10 per lb.

**Plant Operations.**—Plant operations have not changed much since the first of last week, though such changes as have materialized have been in the way of



increased operation. The American Rolling Mill Co. at Middletown added another open hearth, making two now in operation. The Whitaker-Glessner Co. at Portsmouth has three open-hearth furnaces on, and three jobbing mills in operation. The present week's schedule is reported to call for eight sheet mills. The blooming and bar mills of the Andrews Steel Co. will continue to operate two 8-hr. turns, and the sheet mills of the Newport Rolling Mill Co. will operate at the same schedule as last week, about 65 per cent. Steel foundries in this district are running, on an average, about 20 per cent. The plant of the Kelly Nail & Iron Co., Ironton, Ohio, reported last week as having closed down, resumed operations following the clearing up of a misunderstanding regarding rates of wages to be paid certain employees.

**Coke.**—An inquiry for 500 tons of coke a day, received in the local market indicates the possibility of one furnace blowing in shortly. Some releases of suspended tonnages are also being received, but new business is very slow. Only three producers are now operating in the Wise County field. Prices are unchanged, the best grades of foundry coke bringing \$6.50 for Connellsville, \$7.50 for Wise County and \$10 for New River.

**Old Material.**—The scrap market is practically at a standstill. Quotations are unchanged and more or less nominal. Uncut materials are particularly weak. The Nickel Plate Railroad has withdrawn all the better grades of scrap on its latest list, the bids received not being considered sufficiently attractive.

We quote dealers' buying prices:  
Per Gross Ton

Bundled sheets	\$7.50 to \$8.50
Old iron rails	16.50 to 17.50
Relaying rails, 50 lb. and up	30.50 to 31.50
Rerolling steel rails	11.50 to 12.50
Heavy melting steel	10.00 to 11.00
Steel rails for melting	10.50 to 11.50
Car wheels	14.50 to 15.50

Per Net Ton

No. 1 railroad wrought	10.50 to 11.50
Cast borings	5.50 to 6.00
Steel turnings	4.00 to 4.50
Railroad cast	13.50 to 14.50
No. 1 machinery	13.50 to 14.50
Burnt scrap	8.00 to 9.00
Iron axles	23.00 to 23.50
Locomotive tires (smooth inside)	10.50 to 11.50
Pipes and flues	7.50 to 8.00

## Birmingham

BIRMINGHAM, ALA., March 29.

**Pig Iron.**—Except for some improvement in inquiry, another week in the Birmingham iron market was characterized by the usual daily run of small orders for prompt shipment by a growing number of small foundries apparently discovering themselves without iron, but ordering only sufficient to cover needs for execution of their current orders. Twenty-five dollars became the maximum rather than the minimum price during the week and this was shaded in strictly competitive territory even on carlots. Differentials have been sacrificed with more or less regularity. Large pipe makers still fight shy of the market in apparent apprehension that it will go lower, dreading a possible loss of several dollars per ton. They argue that the low point of \$23.90 in the spring of 1919 should not mark the limit to which iron is to go this year. Several signs point to increased consumption of pig iron in the Birmingham district, but not on a scale to especially influence the market. The Woodward Iron Co. blew in its largest stack at Woodward yesterday. This action was to fill new orders and also to care for yard stocks which had been depleted to a state inconsistent with operations of a large foundry iron producer.

We quote per gross ton f.o.b. Birmingham district furnace, as follows:

Foundry, sil. 1.75 to 2.25	\$25.00
Basic	24.00
Charcoal	40.00

**Cast Iron Pipe.**—New business by water and gas pipe shops has been of a scattering nature and the volume not large. At the same time the United States Cast Iron Pipe & Foundry Co. has decided to resume at Bessemer shops April 4 and continue at Anniston and North Birmingham. This will leave only one

Southern shop, that at Chattanooga, idle. The base remains at \$55. Three sanitary pipe shops have resumed, Emory Pipe & Foundry Co. and Eastham Pipe & Foundry Co. at Anniston and Central Foundry Co. at Bessemer. The International Foundry Co. at Anniston will resume this week. Sanitary pipe brokers report the best business in the past three weeks in as many months and better prospects than in six months. Conservative makers report price cutting in many quarters. Their scale is \$60 per ton, but other makers are selling under.

**Coal and Coke.**—The union miners have officially called off the Alabama strike and told the strikers to shift for themselves after April 9. That removes the last vestige of the strike which started in a guerrilla fashion last May and was made a general one in September. Coal and coke are both slow with reduced production. Steam coal ranges from \$3 up and standard foundry from \$7.50 to \$9.

**Old Material.**—It is difficult to imagine anything more stagnant than the scrap market. Some renewed foundry activity has called for No. 1 cast, but No. 1 steel might as well not be for sale, because it is not being bought. A small amount of wrought is moving.

We quote per gross ton f.o.b. Birmingham district yard, as follows:

Old steel rails	\$13.00 to \$13.50
No. 1 heavy steel	12.50 to 13.00
No. 1 cast	18.00 to 19.00
Car wheels	18.00 to 19.00
Tramcar wheels	16.00 to 17.00
No. 1 wrought	15.00 to 16.00
Stove plate	12.00 to 12.50
Cast iron borings	5.00 to 6.00
Machine shop turnings	5.00 to 6.00

## Alabama Plants Resume

BIRMINGHAM, ALA., March 28.—Following the release on a large export order that had been suspended for some time, the Tennessee Coal, Iron & Railroad Co. resumed at the blooming and plate mills in Fairfield. It is also operating the car shops at Fairfield and blooming and rail mills at Ensley. Operations are about on a scale of 70 per cent following a recent recession to 50 per cent.

Steel hoop and band mills in Birmingham have been operating three weeks since resumption, which is longer than was expected.

The Gulf States Steel Co. is operating in a small way in the nail and rod mill at Gadsden, but not making ingots or pig iron.

## Buffalo

BUFFALO, March 29.

**Pig Iron.**—Sales for the past week have been extremely light with inquiry almost negligible. Sales have been limited to carload lots, including resale lots which have been disposed of for lower prices. One furnace has sold several 50 to 100-ton lots of No. 2X foundry, 2.25 to 2.75 silicon, and there have been some small sales of furnace iron at \$30 for No. 2 plain foundry, 1.75 to 2.25 silicon. One producer says it sold about 500 tons in all. Quotations which were made on several desirable inquiries failed to get the business. There has been a great deal of interest manifested throughout the district in the case of an inquiry for from 3,000 to 4,000 tons of foundry put out by a large consuming interest, and though most of the makers of the district bid for this business, it is understood that it was not placed here. Some weeks ago the same company is said to have bought a tonnage of similar size—3,000 tons to be exact—in this district at \$25. Sales for the entire district for the week are believed to total less than 1,000 tons.

We quote f.o.b. dealers' asking prices per gross ton Buffalo as follows:

No. 1 foundry, 2.75 to 3.25 sil.	\$31.00 to \$33.00
No. 2X foundry, 2.25 to 2.75 sil.	29.25 to 31.25
No. 2 plain, 1.75 to 2.25 sil.	28.00 to 30.00
Basic (nominal)	30.00
Malleable (nominal)	32.00
Lake Superior charcoal	40.64

**Finished Iron and Steel.**—A distinct note of optimism is prevalent in the market this week. Makers and sales agencies all report a considerable increase



in inquiry and a very encouraging growth in volume of orders placed. Orders taken were for a heavier tonnage than has marked this market in some time, and sellers believe that there is reason for taking a more hopeful view of the entire business situation. Included in the new inquiry is some very desirable business from Detroit described in the Cleveland market report in THE IRON AGE last week. This includes an inquiry for 11,000 tons of rails for a municipal street railway. A Canadian inquiry is understood to call for two lots of about 500 tons each of plates and shapes, part of which is being placed with mills and part purchased from stock. The business is being put out by the Hydro-Electric Commission of Ontario. Local interests are figuring on a hotel inquiry from Syracuse calling for 1,000 tons of shapes. Inquiries for structural material are in better volume and a local steel fabricator reports the booking of an order for 100 tons of material for a new building for the International Paper Co., Niagara Falls, N. Y. A 600-ton inquiry for J. Spalding & Sons Paper Co., Tonawanda, N. Y., is being figured locally. Sheet and tinplate inquiry is better.

Jobbers quote prices f.o.b. Buffalo as follows: Structural shapes, 3.60c.; plates, 3.80c.; plates, No. 8 gage, 4.65c.; soft steel bars and shapes, 3.50c.; hoops, 4.60c.; blue annealed sheets, No. 10 gage, 4.60c.; galvanized steel sheets, No. 28 gage, 7c.; black sheets, No. 28 gage, 5.65c.; No. 9 gage annealed wire, 4.40c.; wire nails, \$4.35 per keg; cold rolled strip steel, 8.25c.

**Coke.**—There is a very light inquiry just now with prices ranging from \$6 to \$7.50, Connellsville, for standard grades. Shipments are light.

**Old Material.**—All business is very quiet. There is a little activity in stove plate, cast and heavy melting steel, but not to be compared with a normal market. There was a tonnage of stove plate bought recently at \$19. This was a top price. Ten dollars is the top price offered by a local consumer which is not getting any heavy tonnage at this price. Considerable losses have ensued in this market as the result of extensive speculation in various commodities of scrap. Dealers are also finding considerable tonnage on their hands as the result of certain local consumers refusing to accept shipment.

We quote dealers' asking prices per gross ton, f.o.b. Buffalo, as follows:

Heavy melting steel.....	\$11.50 to \$12.50
Hydraulic compressed.....	10.00 to 11.00
Low phos., 0.04 and under.....	18.00 to 19.00
No. 1 railroad wrought.....	16.00 to 17.00
Car wheels.....	18.00 to 19.00
Railroad malleable.....	12.50 to 13.50
Machine shop turnings.....	8.00 to 9.00
Heavy axle turnings.....	11.00 to 12.00
Clean cast borings.....	8.00 to 9.00
Locomotive grate bars.....	11.50 to 12.50
Wrought pipe.....	10.50 to 11.50
No. 1 busheling.....	9.50 to 10.50
Stove plate.....	18.00 to 19.00
Bundled sheet stampings.....	7.00 to 8.00

## Cleveland

CLEVELAND, March 29.

**Iron Ore.**—With no improvement in the outlook for the ore trade during the coming season, there has been a further slowing down of mining operations in the Lake Superior district. Several mines were shut down within the past few days and will not start up again this season unless there is a decided improvement in the outlook. The attitude of these companies is that they do not wish to mine, at the present high costs, ore that they may not be able to sell this season. Already they have fair sized stock piles. Few independent mining companies are now operating at over 50 per cent of normal. Many of the mines that are still operating are working one 8-hr. shift instead of the usual two shifts. Present estimates of ore men are that ore shipments this season will range between 35,000,000 and 40,000,000 tons, the general opinion being that the movement will not reach the latter figure. Some consumers are expected to carry over nearly enough ore to last them until 1922. Shipments have not fallen below 40,000,000 tons since 1914, when the total Lake movement was 32,729,726 tons. No action has been taken toward the further reduction of miners' wages,

but another wage cut is regarded as probable within the next few weeks.

Ore stocks at furnace yards, as well as Lake Erie docks, are very heavy as a result of the blowing out of blast furnaces. Stocks of Lake Superior ore in furnace yards March 1 were close to 23,000,000 tons. The total amount in furnace yards and on Lake Erie docks on that date was in round figures 31,000,000 tons, as compared with 27,000,000 tons on the same date a year ago.

We quote delivered lower lake ports: Old range Bessemer, \$7.45; old range non-Bessemer, \$6.70; Mesabi Bessemer, \$7.20; Mesabi non-Bessemer, \$6.55.

**Pig Iron.**—The demand for small lots of foundry iron shows some improvement as compared with the past few weeks, but prices have further eased off about \$1 a ton and this grade is now quoted at \$25 Valley furnace. However, some producers are still asking \$26. One local furnace interest, after staying out of the market for a few weeks with a \$28 price, has reduced its price to \$26 for outside shipment. For Cleveland delivery local furnaces are still asking \$27 at furnace for No. 2 foundry, but would have to shade this price 50c. a ton to meet the price of Valley iron delivered in Cleveland. However, there is no local demand. One Lake furnace reports sales aggregating 1000 tons, including a 200-ton lot of malleable iron and a 200-ton lot of foundry iron, the remainder being in smaller lots, at \$25.50 to \$26, but would probably meet competition with a \$25 price. We note the sale of 200 tons of foundry iron to a Galion, Ohio, foundry and 100 tons of high silicon iron to a consumer in the same city. A northern Ohio consumer who inquired for 150 tons of malleable iron was quoted \$25 on Bessemer iron and decided to purchase the latter grade. An Erie consumer is inquiring for 500 to 1000 tons of foundry iron for the third quarter, and another Erie foundry has an inquiry out for 200 tons. No local inquiry has developed to test the basic market, but \$23 is regarded as the price on basic. The price situation was discussed at the monthly meeting of the Cleveland district of the American Pig Iron Association, held in Cleveland March 23, and it seemed to be the consensus of opinion of merchant furnace interests that they would go little, if any, lower on prices, and that if steel makers marked their prices down further the merchant furnaces would not attempt to compete with these prices. The increased activity in the automobile industry has not resulted in release of pig iron shipments. As automobile makers have good stocks of castings and automobile foundries large stocks of pig iron, it is not expected that a decided revival in the automotive industry would reflect back to an increased demand upon the blast furnaces for pig iron for three or four months. Pickands, Mather & Co., who will blow in their Perry furnace at Erie within the next few days, have enough iron on that furnace's books to keep it running three or four months. This firm is planning to blow out shortly the one stack it has in operation in Toledo.

We quote delivered Cleveland as follows, based on the new freight rates, these being a 56c. switching charge for local iron, a \$1.96 freight rate from Valley points, a \$3.36 rate from Jackson and \$6.67 from Birmingham:

Basic.....	\$24.96
Northern No. 2 fdy., sil. 1.75 to 2.25.....	26.96 to 27.56
Southern fdy., sil. 2.25 to 2.75.....	32.92
Ohio silvery, sil. 8 per cent.....	46.86
Standard low phos., Valley furnace.....	41.50 to 42.00

**Semi-Finished Steel.**—Revival of the automobile industry is creating some demand for forging billets, small lot sales of which have been made at \$44. Other quotations of \$42.50 have appeared. One inquiry has come out for 500 tons for railroad car work.

**Finished Iron and Steel.**—Although some mills report an improvement in the demand for small lots of steel, the volume of business that is being placed is light. The price situation shows little change, although there seems to be a tendency on the part of some mills to refrain from quoting minimum prices on very small lot orders. Efforts of some plate mills to establish the minimum price on plates at 2.15c. have failed. For desirable orders the 2c. price is still the more common quotation, and some of the mills that withdrew this price a week ago are now quoting plates at 2c. Steel bars are commonly quoted at 2c. and structural material at 2.10c., but 1300 tons of structural

shapes, required for a bridge in Detroit, has been placed slightly under 2c. The Mount Vernon Bridge Co. has taken a bridge for the Louisville & Northern Railroad, requiring 1200 tons of steel. Bids for the Federal Reserve Bank Building, requiring 7000 tons, will be opened next Monday. New inquiries have come out for the Lutheran Hospital, Cleveland, requiring 600 tons, and for two school buildings in Lorain, Ohio, requiring 200 tons. The Municipal Railways, Detroit, has placed 100 cars with the J. G. Brill Co., Philadelphia, and an inquiry has come out for 800 rolled car wheels and 400 axles for these cars. Announcement is made of a sharp reduction in its Pittsburgh warehouse prices by a Pittsburgh mill, but leading Cleveland warehouses have not changed their prices, which are now considerably higher than the new Pittsburgh warehouse price, with freight to Cleveland.

Cleveland warehouses quote steel bars at 3.30c. to 3.34c.; plates, 3.60c. to 3.64c., and structural material, 3.40c. to 3.44c.; No. 9 galvanized wire, 4.45c.; No. 9 annealed wire, 3.75c.; No. 28 black sheets, 5.00c.; No. 28 galvanized, 6.00c.; No. 10 blue annealed, 4.00c.

**Sheets.**—There seems to be a tendency on the part of the independent mills towards more uniformity in sheet prices. Some of the mills that have been naming the lowest quotations have stiffened up somewhat and others have marked down their prices. Quotations on black sheets range from 4.85c to 5c. for the former and 2.90c. to 3c. for the latter. However, in the heavier gages galvanized sheets are quoted as low as 4.75c. and blue annealed at 2.75c., and the latter price might be shaded. Light plates in sheet gages are lower, being quoted on the 2.10c. plate base, or 2.52c. for No. 10.

**Coke.**—Foundries in this territory have large stocks of coke in their yards and the demand continues light, being limited to car lots. Prices on Connellsville foundry coke for prompt shipment range from \$6 to \$7.25 per net ton.

**Old Material.**—Scrap prices are unchanged at the lower levels quoted last week and the market continues almost lifeless. A local mill is offering \$13 for select heavy melting steel scrap to lay down in its yard, but with this exception consumers are staying out of the market. The supply of scrap is becoming somewhat more plentiful owing to the resumption of a few Cleveland plants making automobile parts, and this is having a tendency to make prices weaker. Dealers are buying very little scrap for yard stocks. A producer reports that he offered flashings to local dealers, but was unable to find a purchaser. Dealers are beginning to show some anxiety as to the attitude of mills over the acceptance of high priced scrap, a great deal of which they have on their order books at prices up to \$30 or higher for heavy melting steel. One Ohio mill already has asked that its contract for high priced scrap be cancelled or revised. Dealers claim that they purchased scrap at high prices to fill these orders and cannot revise their contracts unless the producers from whom they bought the material are willing to accept a corresponding reduction.

We quote delivered to consumers' yards in Cleveland and vicinity, per gross ton, as follows:

Heavy melting steel.....	\$12.50 to \$13.00
Steel rails, under 3 ft.....	15.00 to 15.75
Steel rails, rerolling.....	16.00 to 17.00
Iron rails.....	15.00 to 16.00
Iron car axles.....	24.00 to 25.00
Low phosphorus melting scrap.....	15.00 to 15.50
Cast borings.....	9.00 to 9.25
Machine shop turnings.....	6.00 to 7.00
Mixed borings and short turnings.....	8.00 to 8.50
Short turnings for blast furnaces.....	8.00 to 8.50
Compressed steel.....	10.00 to 11.00
Railroad wrought.....	14.50 to 15.00
Railroad malleable.....	14.00 to 15.00
Steel axle turnings.....	10.00 to 10.50
Light bundled sheet stampings.....	6.00 to 7.00
Drop forge flashings over 10 in.....	7.00 to 8.00
Drop forge flashings under 10 in.....	8.00 to 9.00
No. 1 cast.....	17.00 to 18.00
No. 1 busheling.....	8.00 to 9.00
Railroad grate bars.....	14.50 to 15.50
Stove plate.....	14.50 to 15.50
Cast iron car wheels.....	15.00 to 15.25
Pipes and flues.....	8.00 to 9.00

**Bolts, Nuts and Rivets.**—The demand for bolts and nuts continues very light, sales being limited to small lot orders. Practically no business is coming from the

railroads. Prices are not firm, but no inquiries of sufficient size are coming out to test the market. The demand for rivets is very slow and some manufacturers are operating at considerably less than 50 per cent of capacity.

The H. K. Ferguson Co., Cleveland, has been awarded a contract by the Hinde & Dauch Co., Sandusky, Ohio, for a strawboard plant to be built in Fort Madison, Iowa. The buildings will cost about \$300,000 and the company will purchase power plant and other equipment, making the total expenditure for buildings and equipment approximately \$600,000.

## Boston

BOSTON, March 29.

**Pig Iron.**—The New England foundry pig iron supply situation is somewhat clarified by cash readjustments on contracts, a general practice of late. In addition, there is a better demand, slightly less than 1000 tons reported being sold the past week. One 100 ton Buffalo resale silicon 2.00 to 2.50 lot is reported. Other sales were in car lots, usually special analysis, and at prices made under individual circumstances which really have no bearing on furnace base quotations. Included in the sales is a car of Northern charcoal at \$35 furnace base. The market on the surface appears softer, but in the absence of straight furnace iron sales, difficulty is found in establishing a real basis. Quotations are more hearsay than authentic. It is certain, however, furnaces are less insistent on differentials for extra manganese and silicon. Individual lots of resale iron are offered different melters at variable prices, at points where the freight rate is identical. The Griffin Wheel Co., Chicago, inquiry includes 200 tons for its Chelsea, Mass., plant. No other round tonnage inquiries are reported, but small tonnage requirements appear on the increase. Delivered pig iron quotations follow:

East. Penn., sil. 2.25 to 2.75.....	\$29.06 to \$31.06
East. Penn., sil. 1.75 to 2.25.....	28.06 to 30.06
Buffalo, sil. 2.25 to 2.75.....	30.46 to 34.71
Buffalo, sil. 1.75 to 2.25.....	29.46 to 33.46
Virginia, sil. 2.25 to 2.75.....	33.58 to 35.83
Virginia, sil. 1.75 to 2.25.....	32.58 to 34.58
Alabama, sil. 2.25 to 2.75.....	39.41 to 41.91
Alabama, sil. 1.75 to 2.25.....	38.16 to 40.66

**Finished Material.**—Pennsylvania interests are awarded 400 tons of steel for a Boston school. No other round tonnages are reported sold, but there is a noticeable increase in smaller bookings and inquiries and the market is firmer at 2.10c. f.o.b. Pittsburgh and higher. The American Woolen Co. denies the report it has purchased \$5,000,000 worth of structural steel from the United States Steel Corporation. The Maine Central Railroad is asking bids on structural steel for a 31-ft. span double track bridge and a 590-ft. single track one. The Beacon Oil Co., Everett, Mass., has awarded 500 tons of plates and shapes to Pennsylvania interests. The plate market otherwise is quiet at 2.10c. to 2.25c., and higher on special small lots. Bars are still offered at 2c., but there is little call for them. Shafting usually is quoted at 3.25c., yet it is intimated better can be done on desirable tonnages. As low as 4.75c. has been named on galvanized sheets, but not by mills, which usually quote 5c., and as low as 3c. on blue annealed, against 3.20c., a more common price. The demand for sheets, which was fairly good a fortnight ago, appears to have died out, however. A Providence, R. I., manufacturer, inquiring on a round tonnage, withdrew from the market without placing the order. The Rolls-Royce Co. of America has bought 50 tons alloy steels and 25 tons soft stock. The Boston & Maine Railroad has purchased 600 kegs  $\frac{3}{4}$  x 4 in. and 500 kegs 1 x 5 in. track bolts, and 43,360 pairs angle bars.

**Warehouse Business.**—According to local interests, individual orders received daily are for small amounts of material, but in the aggregate amount to considerable. Warehouses in other sections of New England are not doing as well. Stocks everywhere are in excellent condition, purchases of small tonnages being made when necessity requires. Such purchases usual-



are confined largely to bars, bolts, nuts, washers and nails. Prices are reported as firm and unchanged.

Jobbers now quote: Soft steel bars, \$3.53 per 100 lb. base; flats, \$4.40 to \$4.75; concrete bars, \$3.53 to \$3.75; tire steel, \$4.50 to \$5; spring steel, open hearth, \$6; crucible, \$12; steel bands, \$4.23 to \$4.88; steel hoops, \$4.90; toe calk steel, \$5.50; cold rolled steel, \$5 to \$5.75; structural, \$3.53 to \$4.35; plates, \$3.83 to \$4.08; No. 10 blue annealed sheets, \$4.83; No. 28 black sheets, \$6.05; No. 28 galvanized sheets, \$6.95; refined iron, \$3.53 to \$5.40; best refined, \$5; Wayne, \$8.50; Norway, \$12.

**Coke.**—A better movement of foundry coke on contract is reported by the New England producers, but it is still below normal, inasmuch as the pig iron melt since last reports has not increased noticeably. New business, other than an occasional car lot, is limited. The New England Coal & Coke Co. and the Providence Gas Co. continue to quote foundry coke at \$12.29 delivered on contracts and \$12.66 delivered on spot, or \$6.50 f.o.b. ovens, Connellsville, for the latter. Connellsville foundry coke, of good grades, is offered Connecticut consumers at \$5.50 ovens or considerably less than \$12 delivered, and excellent grades at \$6 ovens or \$12.20 delivered plus the war tax. Small tonnages have been booked at both prices.

**Old Material.**—Offerings of machinery cast are increasing, yet the demand is no better. No. 1 usually is quoted at \$21 delivered and No. 2 at \$1 to \$2 less, but seldom bring as much. Two loaded cars No. 1 sold this week at \$18 delivered. The market for stove plate is nominal. Brokers have paid \$4 for rolling mill borings and one purchased chemical borings to be shipped to a rolling mill at the same price. New England railroads are credited with selling borings for less than \$4. Horse shoes, in car lots, have been offered at \$19 delivered. Railroads have sold heavy melting steel to brokers at around \$8, but the steel mills do not want to pay as much. Rejections are noted on some of the limited tonnages shipped out of New England since last reports. Local yard prices on old material follow:

No. 1 heavy melting steel.....	\$7.50 to \$8.00
No. 1 railroad wrought.....	13.50 to 14.00
No. 1 yard wrought.....	11.50 to 12.00
Wrought pipe (1-in. in diameter, over 2 ft. long).....	9.00 to 9.50
Machine shop turnings.....	4.50 to 5.00
Cast iron borings, rolling mills.....	5.00 to 5.50
Cast iron borings, chemical.....	6.00 to 6.50
Heavy axle turnings.....	6.00 to 6.50
Blast furnace borings and turnings.....	4.00 to 4.50
Forged scrap and bundled skeleton.....	5.50 to 6.00
Street car axles and shafting.....	17.00 to 18.00
Car wheels.....	19.00 to 20.00
Machinery cast.....	19.00 to 20.00
No. 2 cast.....	17.00 to 18.00
Stove plate.....	14.00 to 15.00
Railroad malleable.....	13.00 to 13.50
Revolving rails.....	11.00 to 12.00

## St. Louis

St. Louis, March 29.

**Pig Iron.**—Foundries generally are melting somewhat more iron than they have been and the Belleville, Ill., stove foundries have opened up on orders received, while the St. Louis stove foundries report that new orders are coming in and causing interest in pig iron to meet the contracts that are in prospect. The local furnace on the west side of the river has closed down temporarily, but the new furnace at Granite City is operating at a fair output and is reported as selling about 25 per cent of its output to others than its allied consumer whose owners are also interested in the furnace and the new coke ovens recently set at work. There is some indication of speculative interest in pig iron, one speculator being reported as in the market for 5,000 tons if it can be had at a bargain price.

**Coke.**—While there have been a number of orders placed for immediate delivery coke, there is as yet no disposition to contract ahead. About 500 tons have been reported as sold for March and April delivery, but this has been in various small lots for special needs. Local by-product coke is showing no activity. Quotations of \$7 to \$7.50 for best selected Connellsville 72-hr. coke are reported, while New River coke is given a range from \$10 for spot to \$12 for contract coke.

**Finished Iron and Steel.**—Warehousemen report that March has shown a slightly better business than February, while April is regarded as likely to be an improvement over March.

## Philadelphia

PHILADELPHIA, March 29.

Sales departments of some of the independent steel companies are somewhat more optimistic as to prospects for a moderate resumption of buying, though admitting that there is as yet little real substance upon which to base such hopefulness. In a measure the more cheerful feeling comes as a result of reports of more activity in the automobile trade, although it is recognized that most of the automobile companies still have fairly large stocks of steel on hand. There have been some orders, however, for small tonnages of automobile steel. Locally there is interest in the partial resumption of operations at a large plant which manufactures steel automobile bodies.

Some steel business is still being taken at the expense of prices, as, for example, 2600 tons of shapes and universal plates for the new International Nickel Co. plant at Huntington, W. Va., which went at 1.95c., Pittsburgh, but on the ordinary run of current orders several mills have stiffened up in their quotations. Their argument is that extremely low prices have not brought out any additional tonnage and that as they are selling at a loss they may as well make that loss as small as possible. Therefore, on small lots of plates, shapes and bars, some prices quoted are several dollars a ton above the minimum, and such prices have been paid in numerous instances. Pig iron sellers are likewise somewhat firmer in their views as to prices and more iron has been sold in the past week at \$26 base, furnace, than at lower prices. Notwithstanding this attitude on the part of sellers, it is intimated that attractive tonnages of steel or pig iron would bring out prices as low as any that have yet been quoted.

The trade finds everywhere among consumers a feeling that no substantial improvement will take place until the railroad wage question has been settled and the Steel Corporation has announced its expected new price policy.

There are prospects of a further reduction in wage rates at Eastern steel plants, though this has not yet taken definite form.

**Ferroalloys.**—While \$90 remains the nominal price for ferromanganese, one buyer of a carload lot professes his ability to obtain the material at \$85, delivered. Spiegeleisen is weak and has been sold at close to \$30, furnace.

**Pig Iron.**—Because of the very small volume of business offered, pig iron sellers are not in all instances naming prices as low as were obtainable a week or two ago. Although the foundry iron market had settled to a basis of \$25, furnace, on any attractive orders, most of the business taken in the past week has been nearer to \$26, furnace. The pig iron trade professes to see a prospective improvement in demand as a result of reported increase in melt among foundries of this district. Though very little pig iron making capacity is active in eastern Pennsylvania, there are still fairly large stocks of iron in furnace yards, a supply sufficient to last for many weeks at the present rate of buying. The Brooke furnace will go out of blast within a week or ten days, leaving only two regular merchant furnaces, Warwick and Swede, in blast in eastern Pennsylvania. In New Jersey only one stack is active, Oxford, which is making basic iron, while in Virginia the blowing out of the last of the three Low Moor stacks will leave only two active furnaces, one of the Virginia Iron, Coal & Coke Co. and Allegheny. The Bethlehem Steel Co. is supplying its customers with foundry iron from its furnaces at Bethlehem. It is stated by some furnace operators that nothing short of a substantial buying movement, with higher prices, will induce them to place their furnaces on the active list again. The principal sale of the past week was about 1000 tons of low silicon wheel iron to the Pennsylvania Railroad for shipment to Altoona. The business was taken by a central Pennsylvania furnace. A Norristown pipe manufacturer has revived an inquiry for 1000 tons of foundry iron. Virginia iron is being offered at \$26 to



\$28, base, furnace, but practically none is coming to this district because of the high freight rate.

The following quotations are for iron delivered in consumers' yards in Philadelphia or vicinity, except those for low phosphorus iron, which are f.o.b. furnace:

East. Pa. No. 2 plain, 1.75 to 2.25 sil....	\$26.26 to \$26.84
East. Pa. No. 2X, 2.25 to 2.75 sil....	27.26 to 27.84
Virginia No. 2 plain, 1.75 to 2.25 sil....	31.74 to 33.74
Virginia No. 2X, 2.25 to 2.75 sil....	32.99 to 34.99
Basic deliv. Eastern Pa.....	25.00
Gray forge .....	26.26
Standard low phos. (f.o.b. furnace)...	41.50
Malleable .....	29.90
Copper bearing low phos. (f.o.b. furnace) .....	40.00

**Semi-Finished Steel.**—Open hearth rerolling billets are available from Eastern mills at \$38.50, Pittsburgh, but there is very little demand. The nominal quotation for forging billets is \$43.50, Pittsburgh, but there are reports of shading on the limited business that has been offered.

**Plates.**—The Coatesville plant of the Midvale Steel & Ordnance Co., which expected to start a plate mill on Monday, has postponed commencement of operations until next Monday. Possibly some orders allocated to the Johnstown plant will be transferred to Coatesville. The Johnstown plant will within a few days complete a tonnage of rails which it was rolling for the Pennsylvania Railroad and its operations will decline to 10 per cent or less. There is virtually no demand for plates, but the small orders being booked, generally a carload or less, are taken at from 2c. to 2.25c., Pittsburgh. An attractive tonnage might bring out quotations below 2c.

**Structural Material.**—On 2600 tons of structural steel for the new plant of the International Nickel Co., Huntington, W. Va., which will be fabricated by the McClintic-Marshall Co., an independent mill made a price of about 1.95c., Pittsburgh. This is the lowest price reported on structural shapes. The market generally is dull. The ordinary run of business is being done at from 2c. to 2.25c., Pittsburgh.

**Bars.**—Though 1.90c., Pittsburgh, can be done on reinforcing bars, where specifications are not too rigid, the regular market for merchant bars is 2c., Pittsburgh. A few orders for hot-rolled rim stock and spring steel have come from automobile manufacturers. A few hundred tons of rim stock was taken at 2.70c., Pittsburgh, and a similar tonnage of spring steel was taken on a 2c. bar base, with an extra of 15c. per 100 lb. as compared to a 25c. extra which formerly obtained.

**Old Material.**—Further declines are noted on some grades of scrap. Heavy melting steel has been sold at \$12.50 to \$13, delivered; forge fire at \$11.50 to \$12; bundled skeleton, \$9 to \$9.50; blast furnace turnings, \$8.50 to \$9; machine shop turnings, \$9 to \$9.50; No. 1 cast, \$18 to \$19, and stove plate, \$14.50 to \$15. These are reductions of 50c. and \$1 per ton. We quote for delivery at consuming points in this district as follows:

No. 1 heavy melting steel.....	\$12.50 to \$13.00
Steel rails, rerolling.....	17.00 to 18.00
No. 1 low phos., heavy 9.01 and under.....	19.00 to 20.00
Car wheels.....	18.00 to 20.00
No. 1 railroad wrought.....	17.00 to 18.00
No. 1 yard wrought.....	15.50 to 16.00
No. 1 forge fire.....	11.50 to 12.00
Bundled skeleton.....	9.00 to 9.50
No. 1 busheling.....	13.50 to 14.00
No. 2 busheling.....	10.00 to 11.00
Turnings (short shoveling grade for blast furnace use).....	8.50 to 9.00
Mixed borings and turnings (for blast furnace use).....	8.50 to 9.00
Machine-shop turnings (for rolling mill and steel works use).....	9.00 to 9.50
Heavy axle turnings (or equivalent).....	12.00 to 12.50
Cast borings (for rolling mills).....	9.00 to 10.00
Cast borings (for chemical plants).....	11.00 to 12.00
No. 1 cast.....	18.00 to 19.00
Railroad grate bars.....	15.00 to 16.00
Stove plate (for steel plant use).....	14.50 to 15.00
Railroad malleable.....	15.50 to 16.50
Wrought iron and soft steel pipes and tubes (new specifications).....	14.50 to 15.00
Iron car axles.....	No market
Steel car axles.....	No market

**Sheets.**—On an order for 600 tons of blue annealed and galvanized sheets, a Mahoning Valley mill went to 3c., base, on blue annealed and 5c., base, on galvanized. Black sheets are obtainable at 3.85c. to 4c., Pittsburgh, the higher price applying usually to the lighter grades.

**Warehouse Business.**—A slight improvement is noted in orders for steel out of stock, but the tonnage being booked is still far from normal. We quote the follow-

ing prices for Philadelphia delivery, from which there is a reduction of \$3 a ton where shipment is made outside of the Philadelphia local district:

Soft steel bars and small shapes, 3.45c.; iron bars (except bands), 3.45c.; round edge iron, 3.75c.; round edge steel, iron finish, 1½ in. x ½ in., 3.75c.; round edge steel, planished, 4.50c.; tank steel plates, ¼-in. and heavier, 3.45c.; tank steel plates, 3/16-in., 3.75c.; blue annealed steel sheets, No. 10 gage, 4.65c.; light black steel sheets, No. 28 gage, 5.70c.; galvanized sheets, No. 28 gage, 7c.; square twisted and deformed steel bars, 3.55c.; structural shapes, 3.55c.; diamond pattern plates, 5.50c.; spring steel, 5.00c.; round cold-rolled steel, 5.00c.; squares and hexagons, cold-rolled steel, 5.50c.; steel hoops, No. 13 gage and lighter, 4.25c.; steel bands, No. 12 gage to 3/16-in. inclusive, 4.15c.; iron bands, 4.75c.; rails, 3.45c.; tool steel, 16c.; Norway iron, 10c.; toe steel, 4.50c.

## British Iron and Steel Market

### Steel Prices Heavily Cut—Below the Cut Prices of Last Week

(By Cable)

LONDON, ENGLAND, March 23.

Owing to the holidays, everything is at a standstill, though steel prices have been further reduced.

We quote per gross ton except where otherwise stated, f.o.b. maker's works, with American equivalent figured at \$3.92 per £1 as follows:

Midland coke .....	£2 14½	\$10.68
Cleveland basic .....	6 15 to 17 0*	26.46 to 27.44
Cleveland No. 1 foundry.....	7 15 to 8 0*	30.38 to 31.36
Cleveland No. 3 foundry.....	7 10 to 7 15*	29.40 to 30.38
Cleveland No. 4 foundry.....	7 9 to 7 14*	29.20 to 30.18
Cleveland No. 4 forge.....	7 7½ to 7 12½	28.91 to 29.89
East Coast mixed.....	9 0	35.28
East Coast hematite.....	12 0	47.04
West Coast hematite.....	12 0	47.04
Ferromanganese .....	22 0	86.24
Ship plates .....	18 0 to 19 0	70.56 to 74.48
Boiler plates .....	24 0 to 25 0	94.08 to 98.00
Tees .....	17 0 to 18 10	66.64 to 72.52
Channels .....	16 5 to 17 15	63.70 to 69.58
Beams .....	16 0 to 17 10	62.72 to 68.60
Round bars, ¾ to 3 in.....	16 10 to 18 0	64.68 to 70.56
Rails, 60 lb. and up.....	18 0 to 21 0	70.56 to 82.32
Billets .....	13 10 to 14 10	52.92 to 56.84
Sheet and tin plate bars.....		
Welsh .....	14 0 to 14 10	54.88 to 56.84
Galvanized sheets, 24 g.....	24 0 to 26 0	94.08 to 101.92
Black sheets .....	22 10 to 23 10	88.20 to 92.12
Tin plate base box.....	1 5 to 1 10	4.90 to 5.88
Steel hoops .....	20 0	78.40

\*Export price.

It is estimated that British iron and steel production is 40 per cent below normal. The number of workers is only 71 per cent of the number nine months ago, and many are now working on part time.

## Recent Development of Centerless Grinder

(Continued from page 858)

belt tension. Any standard motor drive can be adapted to the sub-plate, in which case no countershaft is needed. The driving wheel is driven through a small gear box of the silent annular type, which in turn is driven from a belt running down and under two idler pulleys to a pulley in the machine. This pulley is fixed on the idler shaft shown on the side of the machine, and the 3-step cone pulley provides the three work rotating speeds. Another pulley on the inside of the machine on the same shaft drives the pump.

A generous bearing is provided for the grinding wheel spindle and phosphor bronze boxes of take-up design are fitted into adaptors, fitted into the frame of the machine. Between the two boxes there is a large reservoir holding oil and in this reservoir the nuts which take care of end thrust and take-up of the bearings are located. The driving wheel bearings are also phosphor bronze boxes in cast iron adaptor sleeves. The bearings on the jackshaft and countershaft are ball-bearing mounted, as well as the idler pulley on the main drive.

The capacity of the machine is given from ¼ to 3 in. diameter and in length from ¼ to 16 in. Rods of brass tubing have been ground up to 3 ft., it is claimed.

# Prices Finished Iron and Steel, f.o.b. Pittsburgh

## Freight Rates

Freight rates from Pittsburgh on finished iron and steel products, in carload lots, to points named, per 100 lb., are as follows:

Philadelphia .....	\$0.35	St. Paul .....	\$0.695
Baltimore .....	0.335	Omaha .....	0.815
New York .....	0.35	Omaha (pipe) .....	0.75
Boston .....	0.415	Denver .....	1.35
Buffalo .....	0.295	Denver (wire products) .....	1.415
Cleveland .....	0.24	Pacific Coast .....	1.665
Cincinnati .....	0.33	Pacific Coast, ship plates .....	1.335
Indianapolis .....	0.345	Birmingham .....	0.765
Chicago .....	0.38	Jacksonville, all rail .....	0.555
St. Louis .....	0.475	Jacksonville, rail and water .....	0.46
Kansas City .....	0.815	New Orleans .....	0.515
Kansas City (pipe) .....	0.78		

The minimum carload to most of the foregoing points is 35,000 lb. To Denver the minimum loading is 40,000 lb., while to the Pacific Coast on all iron and steel products, except structural material, the minimum is 80,000 lb. On the latter item the rate applies to a minimum of 50,000 lb., and there is an extra charge of 9c. per 100 lb. on carloads of a minimum of 40,000 lb. On shipments of wrought iron and steel pipe to Kansas City, St. Paul, Omaha and Denver, the minimum carload is 46,000 lb. On iron and steel items not noted above the rates vary somewhat and are given in detail in the regular railroad tariffs.

Rates from Atlantic Coast ports (i.e., New York, Philadelphia and Baltimore) to Pacific Coast ports of call on most steamship lines, via the Panama Canal, are as follows: Pig iron, 55c.; ship plates, 70c.; ingot and muck bars, structural steel, common wire products, including cut or wire nails, spikes and wire hoops, 75c.; sheets and tin plates, 60c. to 75c.; rods, wire rope, cable and strands, \$1; wire fencing, netting and stretcher, \$1.20; pipe, not over 8 in. in diameter, 85c.; over 8 in. in diameter, 2½c. per in. or fraction thereof additional. All prices per 100 lb. in carload lots, minimum 40,000 lb.

## Structural Material

I-beams, 3 to 15 in.; channels, 3 to 15 in.; angles, 3 to 6 in., on one or both legs, ¼ in. thick and over, and zebs, structural sizes, 2c. to 2.45c.

## Wire Products

Wire nails, \$3.00 to \$3.25 base per keg; galvanized, 1 in. and longer, including large-head barbed roofing nails, taking an advance over this price of \$1.50 and shorter than 1 in., \$2; bright Bessemer and basic wire, \$3.00 to \$3.25 per 100 lb.; annealed fence wire, Nos. 6 to 9, \$3.00 to \$3.25; galvanized wire, \$3.45 to \$3.95; galvanized barbed wire, \$3.85 to \$4.10; galvanized fence staples, \$3.85 to \$4.10; painted barbed wire, \$3.15 to \$3.40; polished fence staples, \$3.15 to \$3.40; cement-coated nails, per count keg, \$2.60 to \$2.85; these prices being subject to the usual advances for the smaller trade, all f.o.b. Pittsburgh, freight added to point of delivery, terms 60 days, net, less 2 per cent off for cash in 10 days. Discounts on woven-wire fencing are 58 to 63 per cent off list for carload lots, 57 to 62 per cent for 1000-rod lots, and 56 to 61 per cent for small lots, f.o.b. Pittsburgh.

## Bolts, Nuts and Rivets

Large structural and ship rivets.....\$3.70  
Large boiler rivets.....3.80  
Small rivets.....60, 10 and 10 per cent off list  
Small machine bolts, rolled threads,

60, 10 and 10 per cent off list  
Same sizes in cut threads.....60 and 10 per cent off list  
Longer and larger sizes of machine bolts....60 per cent off list  
Carriage bolts, ¾-in. x 6-in.:

Smaller and shorter, rolled threads.....60 per cent off list  
Cut threads.....50 and 10 per cent off list  
Longer and larger sizes.....50 and 10 per cent off list  
Lag bolts.....65 per cent off list  
Flow bolts Nos. 1, 2 and 3 head.....50, 10 and 5 per cent off list

Other style heads.....20 per cent extra  
Machine bolts, c.p.c. and t. nuts ¾-in. x 4-in.:

Smaller and shorter.....45, 10 and 10 per cent off list  
Longer and larger sizes.....40, 10 and 5 per cent off list  
Hot pressed sq. or hex. blank nuts.....\$3.25 off list  
Hot pressed nuts, tapped.....\$3.00 off list  
C. p. c. and t. sq. or hex. nuts, blank.....\$3.10 off list  
C. p. c. and t. sq. or hex. nuts, tapped.....\$2.85 off list

Semi-finished hex. nuts:  
¼ to 9/16 in. inclusive U. S. S.....80 per cent off list  
Same sizes S. A. E.....80 and 10 per cent off list  
¾ to 1 in. inclusive U. S. S. and S. A. E.,

70 and 10 per cent off list  
Stove bolts in packages.....75, 10 and 12½ per cent off list  
Stove bolts in bulk.....75, 10 and 10 per cent off list  
Tie bolts.....60, 10 and 10 per cent off list  
Track bolts.....4.90c. base

## Square and Hex. Head Cap Screws

½ in. and under.....65 and 10 to 70 per cent off list  
¾ in. to 1 in.....65 to 70 per cent off list

## Set Screws

½ in. and under.....70 and 5 to 70 and 10 per cent off list  
¾ in. to 1 in.....65 and 10 to 70 per cent off list  
One cent per lb. extra for less than 200 kegs. Rivets in 100-lb. kegs, 25c. extra to buyers not under contract; small and miscellaneous lots less than two tons, 25c. extra; less than 100 lb. of a size, or broken kegs, 50c. extra.

All prices carry standard extras f.o.b. Pittsburgh.

## Wire Rods

No. 5 common basic or Bessemer rods to domestic consumers, \$52 to \$57; chain rods, \$52 to \$57; screw stock rods, \$57 to \$62; rivet and bolt rods and other rods of that character, \$52 to \$57; high carbon rods, \$62 to \$75, depending on carbons.

## Railroad Spikes and Track Bolts

Railroad spikes, 9/16-in. and larger, \$3.25 to \$3.65 per 100 lb. in lots of 200 kegs of 200 lb. each or more; spikes, ½-in., ⅝-in. and 7/16-in., \$4.25 to \$4.50; 5/16-in., \$5 to \$5.25. Goat and barge spikes, \$4.25 to \$4.50 per 100 lb. in carload lots of 200 kegs or more, f.o.b. Pittsburgh. Track bolts, \$4.90 base per keg of 200 lb. Tie plates, \$2.75 per 100 lb.

## Terne Plates

Prices of terne plates are as follows: 8-lb. coating, 200 lb., \$13.80 per package; 8-lb. coating, I. C., \$14.10; 12-lb. coating, I. C., \$15.80; 15-lb. coating I. C., \$16.80; 20-lb. coating, I. C., \$18.05; 25-lb. coating, I. C., \$19.30; 30-lb. coating, I. C., \$20.30; 35-lb. coating, I. C., \$21.30; 40-lb. coating, I. C., \$22.30 per package, all f.o.b. Pittsburgh, freight added to point of delivery.

## Iron and Steel Bars

Steel bars at 2c. to 2.35c. from mill. Refined bar iron, 2.75c.

## Welded Pipe

The following discounts are to jobbers for carload lots on the Pittsburgh basing card:

Steel			Iron		
Inches	Black	Galv.	Inches	Black	Galv.
1½, ¾ and ¾	50½	24	¾	15½	+11½
1½	54½	40	1	24½	6½
¾ to 3	57½	44	¾ to 1½	29½	13½
Lap Weld					
2	50½	38	2 to 2½	25½	11½
2½ to 6	53½	41	3 to 6	27½	14½
7 to 12	50½	37	7 to 12	24½	11½
13 and 14	41				
15	38½	*			

## Butt Weld, extra strong, plain ends

1½, ¾ and ¾	46½	29	1½	+13½	+46½
1½	51½	39	¾	13½	+3½
¾ to 1½	55½	43	1½	23½	10½
2 to 3	56½	44	¾ to 1½	29½	14½

## Lap Weld, extra strong, plain ends

2	48½	37	2 to 2½	26½	13½
2½ to 4	51½	40	3 to 4	28½	16½
4½ to 6	50½	39	4½ to 6	27½	15½
7 to 8	46½	33	7 to 8	19½	7½
9 to 12	41½	28	9 to 12	14½	2½

To the large jobbing trade an additional 1, 5 and 2½ per cent is allowed over the above discounts, which are subject to the usual variations in weight of 5 per cent.

On butt and lap weld sizes of black iron pipe discounts for less than carload lots to jobbers have been seven (7) points lower (higher price) than carload lots and on butt and lap weld galvanized iron pipe have been nine (9) points lower (higher price).

## Boiler Tubes

The following are the prices for carload lots f.o.b. Pittsburgh:

Lap Welded Steel	Charcoal Iron
1½ to 2 in.....19½	1½ to 1½ in.....+10
2½ in.....24	2 in.....List
2½ to 3¼ in.....30½	2½ in.....-2
3½ to 4½ in.....40½	2½ in.....-6
	2½ to 3¼ in.....-7
	3½ to 4½ in.....-12

## Standard Commercial Seamless—Cold Drawn or Hot Rolled

Per Net Ton	Per Net Ton
1 in.....\$327	1½ in.....\$207
1¼ in.....267	2 to 2½ in.....177
1½ in.....257	2½ and 3¼ in.....167
1½ in.....207	4 in.....187
	4½ to 5 in.....207

These prices do not apply to special specifications for locomotive tubes nor to special specifications for tubes for the Navy Department which will be subject to special negotiations.

## Sheets

Prices for mill shipments on sheets of standard gage in carloads, f.o.b. Pittsburgh, follow:

Blue Annealed		Cents per Lb.	
Cents per Lb.		Cents per Lb.	
No. 8 and heavier 2.95 to 3.45		Nos. 11 and 12...3.05 to 3.60	
Nos. 9 and 10		Nos. 13 and 14...3.10 to 3.65	
(base) 3.00 to 3.55		Nos. 15 and 16...3.20 to 3.75	

## Box Annealed, One Pass Cold Rolled

Cents per Lb.		Cents per Lb.	
Cents per Lb.		Cents per Lb.	
Nos. 17 to 21...3.60 to 4.15		No. 28 (base)...3.85 to 4.35	
Nos. 22 to 24...3.70 to 4.20		No. 29...3.95 to 4.45	
Nos. 25 and 26...3.75 to 4.25		No. 30...4.05 to 4.55	
No. 27...3.80 to 4.30			

## Galvanized Black Sheet Gage

Cents per Lb.		Cents per Lb.	
Cents per Lb.		Cents per Lb.	
Nos. 10 and 11...4.00 to 4.70		Nos. 25 and 26...4.70 to 5.40	
Nos. 12 to 14...4.10 to 4.80		No. 27...4.85 to 5.55	
Nos. 15 and 16...4.25 to 4.95		No. 28 (base)...5.00 to 5.70	
Nos. 17 to 21...4.40 to 5.15		No. 29...5.25 to 5.90	
Nos. 22 to 24...4.55 to 5.25		No. 30...5.50 to 6.20	

## Tin-Mill Black Plate

Cents per Lb.		Cents per Lb.	
Cents per Lb.		Cents per Lb.	
Nos. 15 and 16...4.00 to 4.15		No. 28 (base)...4.20 to 4.35	
Nos. 17 to 21...4.05 to 4.20		No. 29...4.25 to 4.40	
Nos. 22 to 24...4.10 to 4.25		No. 30...4.25 to 4.40	
Nos. 25 to 27...4.15 to 4.30		Nos. 30½ and 31.40 to 4.45	

## Non-Ferrous Metals

### The Week's Prices

Cents Per Pound for Early Delivery

	Copper, New York		Tin New York	Lead		Zinc	
	Lake	Electro- lytic		New York	St. Louis	New York	St. Louis
March							
23.....	12.25	12.00	29.25	4.20	4.00	5.20	4.70
24.....	12.37½	12.12½	30.00	4.25	4.00	5.20	4.70
25.....	12.50	12.25	30.25	4.25	4.00	5.20	4.70
26.....	12.50	12.37½	...	4.25	4.00	5.15	4.65
28.....	12.75	12.50	30.25	4.25	4.00	5.15	4.65
29.....	13.00	12.62½	29.25	4.25	4.00	5.15	4.65

NEW YORK, March 29.

Demand has not improved materially, but there is a better tone to some of the markets. Drastic reductions in the production of copper have caused an advance in prices. The tin market is quiet, but nominally a little higher. Lead has become scarcer, but buying has not increased sufficiently to strengthen the market to any decided extent. Zinc continues the most unsatisfactory and weakest of all the metals.

### New York

**Copper.**—The most important development in this market has been the announcement to-day of the closing down of the four porphyry copper producing companies and also the announcement, unconfirmed, that the Anaconda Copper Mining Co. had stopped operations. There have been rumors for some time that production was being still further curtailed and the effect the past week has been a gradual strengthening in the asking price. The principal reason for the drastic curtailment is that the cost of production leaves no margin at present market prices. As a result of these conditions electrolytic copper has advanced to 12.75c., delivered, for early delivery, or 12.62½c., New York, and it is claimed that very little metal is obtainable at this level. The market may be quoted at 12.75c. to 13c., delivered, for early delivery, with future positions correspondingly higher. It is difficult to obtain reliable quotations on Lake copper, but this market may be conservatively quoted at 13c. to 13.25c., delivered, for early shipment. While inquiry for domestic consumption is better, buying is still extremely small, but purchases for foreign account continue fairly satisfactory. Exports thus far this year have been larger than for the corresponding period in 1920 and in January Germany was the largest purchaser, taking one-third of the total exports of about 24,000 gross tons.

**Tin.**—This market has continued quiet with a moderate activity, confined mostly to transactions between dealers. One large consumer, however, bought several lots of tin during the week, which represented the bulk of the demand from this source. On the New York Metal Exchange 25 tons of April-May shipment from the East was sold at 30.62½c. on March 23, while on the following day two lots of 25 tons each of May-June shipment were sold at 31c. and 30.75c. respectively. While demand is light in general, there continue to be few sellers. The London market has been closed from Thursday night until this morning, and this has caused the market here to take on more or less of a holiday aspect so that quotations since Thursday have been largely nominal. Spot Straits tin has advanced slightly during the week until to-day it is quoted at 29.25c., New York. The London market opened this morning at a considerable concession from Thursday's prices with spot standard at £161 10s., future standard at £165 and spot Straits at £167 10s. This reveals a weak market in that center because nominally there would be an accumulation of orders over the holidays which would generally result in higher rather than lower prices. Arrivals thus far this month have been 1583 tons, with the quantity afloat only 400 tons.

**Lead.**—The leading interest late yesterday advanced its price from 4c. to 4.10c., New York and St. Louis, and there are evidences that previous to this it had prac-

tically withdrawn from the market. Conditions continue very quiet, with production radically cut down and the metal hard to buy, even with demand very light. Independent sellers are quoting 4.25c., New York, or 4c., St. Louis, and, so far as is known, metal that has been sold has been available only from such sellers.

**Zinc.**—Prime Western is quoted and can be obtained at 4.65c., St. Louis, or 5.15c., New York, for early delivery, which we quote as the market. There is no improvement in demand and no desire on the part of sellers to press the market. Conditions and prospects in this market are more unsatisfactory than any other of this group.

**Antimony.**—This market is quiet, with wholesale lots for early delivery quoted at 5.25c. to 5.50c., New York, duty paid.

**Aluminum.**—The leading producer continues to quote virgin metal in wholesale lots for early delivery at 28c., f.o.b. plant, and the same grade from other sellers is quoted at 23c. to 23.50c., New York. It is rumored, but not confirmed, that the leading steel interest has purchased recently a large quantity at prices lower than the foregoing.

**Old Metals.**—The market is firmer this week and prices a little higher. Dealers' selling prices are nominally as follows:

	Cents Per Lb.
Copper, heavy and crucible.....	12.00
Copper, heavy and wire.....	11.00
Copper, light and bottoms.....	9.75
Heavy machine composition.....	11.50
Brass, heavy.....	8.00
Brass, light.....	6.50
No. 1 red brass or composition turnings.....	9.25
No. 1 yellow rod brass turnings.....	6.00
Lead, heavy.....	3.75
Lead, tea.....	3.00
Zinc.....	3.50

### Chicago

March 29.—Tin is slightly stronger and spelter has declined, while lead is uncertain as it is not yet apparent what effect yesterday's advance by the leading interest will have on the market. For a few days last week there was a fair volume of trading in tin among dealers as well as some buying of futures by consumers, but interest in the metal has since subsided. Inactivity of galvanizers accounts for the slow market in spelter, while the large offerings of alloys containing antimony have adversely affected the demand for the pure metal. There have been no changes in old metal prices. We quote Lake copper at 12.87½c. in carload lots; tin, 32c. to 33c.; lead, 4.15c. to 4.25c.; spelter, 4.75c. to 4.90c.; antimony, 7.50c. On old metals we quote copper wires, crucible shapes, 8c.; copper clips, 8c.; copper bottoms, 7c.; red brass, 8c.; yellow brass, 5.50c.; lead pipe, 2.75c.; zinc, 2c.; pewter, No. 1, 17c.; tinfoil, 19c.; block tin, 22c., all these being buying prices for less than carload lots.

### St. Louis

March 28.—The non-ferrous markets have changed but little. Demand is small and prices show no increase. In car lots lead is quoted at 4c. and spelter at 4.75c. to 4.90c. In less than car lots quotations are as follows: Lead, 4.50c.; spelter, 5.50c.; tin, 33c.; copper, 13.75c.; antimony, 7c. In the Joplin district ores were in a little better demand with most of the lead selling, basis 80 per cent, at \$40 per ton or \$5 better while zinc blende sold at \$22.50, basis 60 per cent for the best grades. There was no calamine being offered as prices are too low to make the working of these deposits profitable. On miscellaneous scrap metals we quote dealers' buying prices as follows: Light brass, 4c.; heavy yellow brass, 6.50c.; heavy red brass, heavy copper and copper wire, 9c.; pewter, 13c.; tinfoil, 20c.; zinc, 3c.; lead, 3.50c.; tea lead, 2c.; aluminum, 10c.

Thread milling is to be discussed at a meeting of the Cleveland section of the American Society of Mechanical Engineers on April 5 by E. J. Lees, president Lees Bradner Co., Cleveland.



## The Russian Collapse and Its Lesson at Home

(Continued from page 847)

pulsion for a pittance in food and without hope of freedom. Revolution into communism has made his condition worse than ever before under capitalism.

### Communist State a Great Corporation

But, strange as it may seem, communism, advocated as the opposite of capitalism, is almost identical with capitalism enormously magnified. The communist state is virtually a corporation which owns everything, and in which every citizen is a stockholder. A similar condition can be imagined in the formation, for instance, of a United States Trust Co. to take over all our industries and properties and assure employment to every man and woman in our country. In Russia, the soviet state failed industrially, its leaders say, because it made the mistake of driving out all those experienced in managing large enterprises. When the mistake was recognized, experts were besought to occupy leading positions, even at enormous salaries. In America, with the leadership of the men who created Standard Oil, United States Steel and other great and successful corporations, the super-corporation could be managed as well as humanly possible.

However, the very idea of being forced without choice to work for one enormous monopoly is repugnant to every one of us. And, even with all the good will in the world, experience tells us that such a huge corporation could not be successful; it would be too big. For the same reason, even with the best of management, the soviet state industrial monopoly must have failed. Its leaders devoted their lives to the pursuit of an ideal, were ready to sacrifice everything to gain their object, and yet their industrial machine would not go. The reward they held out to the Russian proletarian was a voice in the management and a share in the profits of his industry; and neither of these blessings has been granted.

### Workers' Real Participation in Ownership

However, real participation in management and profit is within the reach of every worker in our "capitalistic" republic, for the market price of a share of stock in any well managed industry. What more can communism offer? One vote in a stockholders' meeting is no more insignificant than one vote in a soviet government. In either case, combination of voters into parties provides the means of control. The workman must not think that a soviet government would automatically be a good government, any more than a corporation management must automatically be a good management. The rank and file of the voters of either must form parties and adopt policies and see that their elected leaders execute the plans. Workmen participating in management will find, just as other managers have found, that it is much easier to succeed with small concerns than with enormously large ones. Having passed many laws to keep corporations from growing too big, we are not likely to permit the formation of any soviet "octopus."

The idea of participation by workmen as stockholders in the corporations for which they work is not new. Long before the United States Steel Corporation put into effect its well known plan, many a thrifty workman had bought a share or two in the cotton mill or other industry in which he was employed. The growth of workmen's investments in corporations has been stimulated in recent years by the general purchase of Liberty bonds, the increasing familiarity with the ease of converting these into other securities, and the added excitement which always attaches to a gambling element in any transaction. Labor banks and stockholdings by labor groups are under consideration. If workmen want to run industries as proprietors, they need no revolution to bring it about. Naturally, they must prepare themselves to manage intelligently, or employ those who can, just as any owner must if he is to obtain a fair living and a profit.

It is time that the fog of vituperation and accusation by senesh agitators should be swept away. As mentioned before, more than a thousand of the foreign-language publications are feeding their readers with lying words and pictures, literally urging revolution in the United States against all existing laws and customs, including marriage, home, church and religion. Let any American who doubts this, obtain copies of some of the illustrated periodicals of this class. It is not necessary to read Lithuanian, Finnish or Polish in order to grasp the character of the picture lessons.

The antidote for this poison is plenty of plain truth. The worker must be taught that he ought to do his own thinking; that of what he produces, some part must be held out for repairing and improving the factory; that management is a difficult profession and worthy of being well paid; and that the men who own factories and therefore manage them are generally those who spent less than they earned and so acquired money to invest. The worker must be induced to save his own money and use it to buy shares in the business which he understands best, and so to make himself a capitalist.

If a huge monopoly of our national resources is the most desirable development, the way is already open through our established form of government. It will be infinitely easier to alter the practices of our Government by orderly means than to smash the whole machine and then try to build something new out of the wreckage. But, as the vast majority of American citizens are firmly set against monopoly and the concentration of arbitrary power in the hands of the few, there is no possible room for a Marxian monopoly in a government of, by and for the people.

The ultimate outcome of the soviet experiment is still in the unknown future. It may fall in the turmoil of bloody fighting between its mercenary troops and revolutionaries in all parts of Russian territory. More likely, perhaps, some of the present leaders may win through by forsaking communist theories and permitting the re-establishment of the principles of private property and trade. But, as no structure of society adapted to the needs of civilized life has yet been evolved under communist rule, there is no doubt whatever that within a few years the government of Russia will bear very slight resemblance to the soviet autocracy of to-day. With the inevitable return to the system of individual reward for individual effort, those of the former leaders of Russian commerce and trade who remain alive will take up the work of rebuilding Russian industry; and they will not be favorably disposed toward those people who were ready to aid a despotic dictatorship for the sake of temporary gain through trade.

### Reparation Claims Allowed

WASHINGTON, March 29.—The long-standing reparation case of the Sloss-Sheffield Steel & Iron Co., the Alabama Co., and the Woodward Iron Co., seeking reparation on shipments of pig iron from Alabama furnaces to points in Central Freight Association territory was brought to an end with a decision handed down last week by the Interstate Commerce Commission. The Sloss-Sheffield company was awarded reparation of \$126,764, the Woodward company \$31,864, and the Alabama Co. \$9,189. The awards are based on shipments running back to 1913 and grew out of adjustments of rates on pig iron from Alabama furnaces to Ohio River crossings.

### Interest in Belgian Steel

SEATTLE, March 22.—Jobbers have cancelled further orders for sheets, plates and pipe, stocks assembled in the warehouses being capable of taking care of all requirements for 90 days and more. Interest is being shown by jobbers in the Belgian market, and although no offers of Belgian steel have been made here this stock will become a factor as the all-water routes from Belgium through the Panama Canal to Puget Sound would offer the easiest possible transportation and form a strong competitive possibility with quotations made by Eastern mills. More interest has been shown here in Belgian bars than in any other product.

## PERSONAL

E. H. Weitzel, for 13 years manager fuel department, Colorado Fuel & Iron Co., was appointed on March 21 general manager, succeeding the late J. B. McKennan. D. A. Stout was promoted from assistant manager to manager of the fuel department. Mr. Weitzel received his first coal mining experience in the Pittsburgh district. In 1903, when general superintendent of the Empire Coal Co., Bellaire, Ohio, he went to Dawson, N. M., where he took employment as a coal digger. He continued at Dawson in various capacities until 1906, when he opened an engineering office at Trinidad, Col. In 1907 he was appointed chief engineer of the fuel department of the Colorado Fuel & Iron Co., and the next year he became manager of the fuel department. He was graduated from an engineering college, and had had some engineering experience when he removed to Colorado in 1908, and worked as laborer, mechanic's helper and carpenter at various coal mines of the company. In September, 1918, he was appointed chief engineer of the fuel department and less than a year later became assistant manager, retaining the duties of chief engineer.

C. F. Blackmer, assistant superintendent American Steel & Wire Co. plant at Waukegan, Ill., has been appointed superintendent of the new wire mill which is being constructed in connection with the Minnesota Steel Co. plant at Duluth, Minn. Mr. Blackmer will leave Waukegan May 1, to take charge of the construction of the new mill, which will take about a year.

N. S. Rathburn, secretary of the company, succeeded Albert Wiggins, New York, at the annual meeting of the National Acme Co., Cleveland, March 24. E. L. Geismer was elected a director to fill the vacancy caused by the death of Abraham Stearn. No change was made in the list of officers.

Willard Fisher, who had been with the Illinois Zinc Co. for 28 years, has been appointed Eastern sales manager of the American Zinc Products Co. with headquarters at the New York office, 50 Church Street, for the sale of sheet zinc, plate zinc and roofing material. M. L. Filley will remain manager of the local New York office.

R. G. Hendricks, factory manager King Motor Car Co., Detroit, has resigned.

A. J. Bates, president Bates Expanded Steel Truss Co., Chicago, which has a large plant at East Chicago, Ind., will sail from San Francisco on April 2, for a trip around the world.

John W. Koehn has been made general manager of the Adrian Brass & Aluminum Castings Co., Adrian, Mich.

Barnes Compton, formerly assistant purchasing agent International Steel Co., 51 Chambers Street, which has been liquidating, is now sales representative in the Eastern district for the Canton Sheet Steel Co. Mr. Compton was formerly Southeastern representative for the Bethlehem Steel Co. R. R. Venidge, who was formerly in charge of European and Far Eastern sales for the International Steel Co., is now general sales manager of the Steel Barrel Co. of America, 42 Broadway, New York. Mr. Venidge, previous to his connection with the International Steel Co., was district representative of the Detroit Steel Products Co., with offices in Boston.

L. A. De Marais, formerly with the New York sales offices of the Ohio Locomotive Crane Co. and the Bedford Foundry & Machine Co., is now on the New York sales force of the Champion Engineering Co., 149 Broadway, New York.

E. G. LeLaurin has resigned as Southern sales representative of the Southern Supply & Hardware Co., St. Louis, to become associated with W. D. Jenkins, representative of railway equipment and supplies, Dallas, Tex., in a similar capacity, looking after the Dallas-Houston-New Orleans territory.

Joseph Jacobson, district manager Chicago office, Continental Iron & Steel Co., who spent some time at the New York office at 2 Rector Street, has returned to the Chicago office.

W. C. Peterson, for 12 years with the Packard Motor Car Co., has been placed in charge of the metallurgical department of the Atlas Crucible Steel Co.'s mills at Dunkirk, N. Y. With the Packard company he has been in charge of the metallurgical laboratories, heat-treating departments and research work. He is a member of various metallurgical and engineering societies and is serving on a number of important national committees. Mr. Peterson's new work will include research and standardization of chrome-molybdenum products.

E. E. Jones has been placed in charge of the New York office of the Homestead Valve Mfg. Co., Homestead, Pa., at 242 Lafayette Street, New York City, where he will carry a stock of Homestead quarter-turn valves and Hovalco valves.

R. E. Carpenter, Hollister White & Co., Boston, has been made president Hartford Automotive Parts Co., Hartford, Conn., to succeed Jarvis McA Johnson, resigned. He will take active charge of the plant. James M. Carney has resigned as general manager and chairman of the board of directors. L. J. Harley, Jr., Springfield, Mass., has been made vice-president, and H. W. Bigelow, re-elected treasurer and secretary. The board consists of these officers and L. R. Cheney, H. A. Allen and William M. Ferris, Boston, and F. R. Switzer.

Walter M. Spaulding has been re-elected president of the Graton & Knight Mfg. Co., Worcester, Mass., belting. Other officers are: George T. Dewey and L. L. Harr, vice-presidents; Frank H. Willard, vice-president and general manager; Henry C. Graton, treasurer; W. Virgil Spaulding, assistant treasurer; Fred W. Goodrich, general works manager; and J. R. Fox, sales manager.

F. G. Platt was re-elected chairman of the board of directors of the New Britain Machine Co., New Britain, Conn., last week. The other officers are: H. H. Pease, president and treasurer; R. S. Brown, secretary; H. E. Erwin, assistant secretary; A. Boul, Stanley T. Goss and C. R. Hare, vice-presidents.

George B. Nisbet has assumed his duties as production manager of the International Smelting & Refining Co., Erie, Pa., resigning from the Brier Hill Steel Co., Youngstown, Ohio, which he served as chief metallurgical engineer.

Charles Major, for many years president of the A. & P. Roberts Co., now known as the Pencoyd Iron Works of the American Bridge Co., Pencoyd, Pa., has retired after 41 years continuous service at that plant, and on Saturday evening, March 26, was tendered a testimonial dinner in Philadelphia by his associates. There were also a number of guests. Percival Roberts, Jr., of the board of directors of the United States Steel Corporation, and Charles Belsterling of the legal department of the corporation, who was formerly traffic manager of the Pencoyd works, were the principal speakers.

## Lower Prices in Italy

MILAN, ITALY, March 12.—Further price recessions are noted in copper and brass, and the market generally is very unsteady. The labor disturbances in Florence have subsided. The trouble was started by foreigners and the leader has been expelled. Your correspondent reached Florence a few days after the outbreak, but was unable to discern that anything had really happened. The occasion is another proof that Italy will never turn toward Lenine.

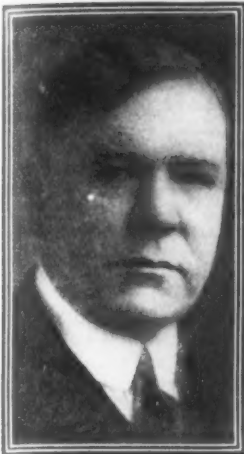
The prices of electrolytic copper have fallen 25 lire (¼c.) per 100 kilos, f.o.b. Milan, and 50 lire (0.9c.) on copper sheets, wire and tubes from the prices of March 5 (page 786, THE IRON AGE, March 24). Brass sheets, wire and tubes are down 50 lire and brass rods 25 lire.

Other changes are inconsequential. Tin plate is now quoted at 235 lire against 240 on March 5.



## OBITUARY

SAMUEL A. BENNER, for 33 years actively identified with the steel business and most of that time in positions of responsibility and prominence, died at Buffalo,



S. A. BENNER

on Saturday evening, March 26. Before he was thirty years of age he had gained a world-wide knowledge of iron and steel business, at 33 years he was general manager of sales of the Carnegie Steel Co. and was only 50 years old at his death. He was born in Pittsburgh in 1871 and in 1888 went into the general office of Carnegie, Phipps & Co., Ltd. On the consolidation of this firm and of Carnegie Brothers & Co., Ltd., into the Carnegie Steel Co., Ltd., 1892, he became chief clerk in the general sales department under the general sales agent, William P. Palmer, now president of the American Steel & Wire Co. In 1897, 1898 and 1899

Mr. Benner represented the Carnegie company in Montreal and in Mexico, and investigated conditions in Europe and South America, becoming foreign sales manager for the company in Pittsburgh in 1900. In the latter part of 1902 and until the latter part of 1904 he was head of the sales department for the International Nickel Co., but he returned to Pittsburgh in 1904 to take the sales managership of the Carnegie Steel Co. In 1911 he became assistant to the president of the Pittsburgh Steel Co. and continued in that capacity for two years. Then he devoted himself to special work for particular interests, part of the time in Europe. In 1916 and 1917 he represented the American Steel Export Co. in a trip through Russia, Scandinavia, Great Britain and France, and became general manager of sales in New York for the company. Later he was vice-president of the Federal Export Corporation and not long ago became president of the Empire Tube & Steel Corporation, College Point, N. Y. Mr. Benner's international outlook gave authority to his occasional contributions on the broad economics of the industry. He was a man of strong convictions but quiet and unostentatious, accepting with grace the distinctions which came to him.

MAHLON H. TIMBERLAKE, president Biggs Pump & Supply Co., wholesale mill plumbing and well supplies, La Fayette, Ind., died March 14 at a hospital in that city. He was born at Hillsboro, Ohio, on Feb. 5, 1849, and moved to La Fayette in 1868. He had been identified with the pump and supply company almost continuously since that date, having been associated with his father-in-law, the late B. F. Biggs. When the business was reorganized several years ago Mr. Timberlake was elected president.

WALTER FENN DEMING, president and treasurer Deming Co., Salem, Ohio, manufacturer of pumps and hydraulic machinery, died March 19 of heart disease after several months' illness. He was born in Salem Aug. 26, 1853, and was graduated from the local high school in 1872. Mr. Deming became secretary and general manager of the Silver & Deming Mfg. Co., founded in 1854, which company began the manufacture of pumps in 1880, six years after Mr. Deming's entrance into the business. In 1890 a division was made, the Deming Co. taking over the pump business. Mr. Deming became treasurer and upon the death of his father, John Deming, in 1894, became president. He was a director and vice-president of the Farmers National Bank and was very active in civic affairs. All local manufacturing plants suspended business for a brief period during his funeral.

JOHN M. STARR, Starr Brothers' Mfg. Co., East Hampton, Conn., bell manufacturer, died at his home there March 16, aged 75 years. He was treasurer of the Pocotopaug Water Power Co. and a director of the Middletown Trust Co.

GEORGE EMERY RICHARDS, who was employed for 53 consecutive years by the Snell Mfg. Co., Fiskdale, Mass., bits, etc., died recently at the age of 75. Mr. Richards was active until about eight months ago, as master mechanic, when illness forced him to relinquish his duties.

CHARLES G. STODDARD, former head of the Stoddard-Dayton Automobile Co., died in a hospital at Galveston, Tex., on March 9, at the age of 57. He was born at Dayton, Ohio, and was educated at Princeton University. Upon leaving the Stoddard-Dayton company he became vice-president of the United States Motors Co. Several years ago he purchased a ranch in Texas and retired.

ADDISON STEVENS HODGES, for many years associated with the New England foundry industry, died at his home in Somerville, Mass., March 16, in his ninetieth year. During his life he was associated with the Wheeler Foundry, Worcester, Mass., and subsequently with Hyde Park, Chelsea, Somerville and Lynn foundries. He was a native of Smithfield, R. I.

SAMUEL S. GARRETSON, for about 30 years in charge of sales for the A. M. Byers Co., Pittsburgh, and for the past 15 years in charge of the city order department of Kelly & Jones Co., pipe and plumbing supplies, died at the Presbyterian Hospital, Pittsburgh, March 12. He was born in Clarksville, Pa., about 70 years ago, coming to Pittsburgh as a young man.

FREDERICK S. HAMM, formerly superintendent of the plant of J. S. McCormick Co., Pittsburgh, foundry facings and supplies, died at Allegheny General Hospital, Pittsburgh, March 12. He was 63 years old and was affiliated with the J. S. McCormick Co. for a period of 34 years, retiring about 7 years ago.

JAMES ROWLAND HOE, president J. R. Hoe & Sons Foundry Co., Middlesboro, Ky., died at his home, that city, on Feb. 27. Mr. Hoe was born in Pennsylvania in 1855.

GEORGE W. KEPLER, general manager Computing Scales Co., Dayton, Ohio, for 10 years, died at his home in that city on Feb. 27 at the age of 53.

### To Extend Safety Service

WASHINGTON, March 29.—Under the terms of a co-operative agreement between the National Safety Council and the United States Bureau of Mines, C. L. Colburn, who has served as assistant chief mining engineer of the Bureau of Mines for the last two years, has been given the duty of visiting the various iron and coal mines of the country for the purpose of acquainting the operating companies with the scope of the technical safety service available to them through this co-operation. Mr. Colburn's work will be under the general direction of B. F. Tillson, chairman of the mining section of the National Safety Council, who also acts as consulting mining engineer of the Bureau of Mines.

Although both the Bureau of Mines and the National Safety Council have published a considerable number of pamphlets on mine-safety subjects, no one has been in the past assigned to the special work of visiting the mines and personally assisting the operators in applying this information to their particular problems. Mr. Colburn's duties will be to familiarize himself with the best methods of preventing accidents as demonstrated by the mining companies most advanced in this respect and to disseminate suggestions looking to the improvement of safety practices.

The Interstate Commerce Commission has entered an order denying the application of carriers for authority to continue rates on slag from Birmingham, Ala., and group to Southern points without observing the long-and-sort haul provision.



## BUILDING TRADES STRIKE

### Governor of Massachusetts Will Try to Bring About a Settlement

Gov. Channing Cox, Massachusetts, has announced his intention of interfering in the Boston building trades strike, in an effort to bring about a settlement between employer and employee. It is probable he will appoint five men representing the labor bodies involved and the employers, and five business men not financially interested in the building trades. These ten men may select the eleventh, possibly a Superior Court justice, and the committee will immediately begin meetings.

During the recent Boston Chamber of Commerce investigation of the building situation, Governor Cox made partial arrangements to have an investigation similar to that recently held in New York, but owing to certain developments, during and since the chamber's investigation, changed his plans somewhat.

His investigation comes on the eve of the builders being forced by labor to adopt the closed shop. Numerous conferences between representatives of the builders, building trades council and the Massachusetts State Board of Conciliation and Arbitration the past fortnight have been without constructive results. Employees have held out for \$1 an hour without arbitration of working conditions, while employers insist arbitration of working conditions is more important than the question of wages.

In the meantime, practically all of the construction work on which employees struck ten weeks ago, has resumed on a basis of 90c. per hour for skilled help. Builders have no difficulty in securing all help needed. Ample police protection has been given, but union men have attempted no intimidation.

### Wages and Cost of Living

Figures prepared by the Bureau of Labor Statistics show that in February, 1920, 188,958 employees of iron and steel works received \$13,892,294 as a half-month's pay, an average of \$73.52 each. This year, in the same 116 plants, the 143,228 employees received \$9,274,639, an average of \$64.76 each.

Other figures, prepared by the same agency, show that the wholesale cost of commodities dropped between February, 1920, and February, 1921, from an index number of 249 to one of 167. This does not include rents, which have advanced. And retail prices have not in all cases responded promptly to the trend of wholesale prices.

Assuming, however, that retail and wholesale prices have followed similar curves of decline, and placing the present figure for rent at 25 per cent of income, with a considerably lower figure (about 19 per cent) a year ago, it would appear that this year's wages should be of much greater value to the recipient than last year's. For, if all of last year's wages above the amount needed for rent were absorbed in the other items of living costs, and these items followed the wholesale trend during the intervening year, then they would absorb \$39.92 out of the present half-month's pay and leave a surplus, according to the appended table, of \$8.65, which amounts to \$208 per annum.

	February, 1920	February, 1921	Drop, Per Cent
Average pay, ½ month.....	\$73.52	\$64.76	11.9
Wholesale commodities .....	249	167	32.9
Rent, estimated .....	\$14.00	\$16.19	.....
Other items in living .....	59.52	39.92	32.9
Surplus .....	.....	8.65	.....

### Looking for Wage Revision

UNIONTOWN, PA., March 28.—In the face of further drastic curtailments in production, how long will the United States Steel Corporation continue its present policy of no wage revisions? That is the question that is being asked throughout the Connellsville bituminous region. H. C. Frick Coke Co. production this week will not exceed 35 per cent, the lowest production during the present period of deflation and the lowest since the

depression of 1907. Leisenring, Trotter, Leith and Continental plants of the Frick company are virtually suspended, an unprecedented move by the corporation. The effect of labor organization efforts, as stated in a story in THE IRON AGE of last week, is being given careful consideration. It is due entirely to the policy of the Steel Corporation that the Connellsville region, with the exception of some operations along the Monongahela River valley, has remained "open shop." For this the independent operators are grateful and the attitude toward the Steel Corporation policy in this region has been more lenient because of recognition of past services. The Steel Corporation has established heretofore wage and working conditions, and it is admitted in the industry that conditions in the Fayette County field are much above conditions generally in union fields. There is no desire for the organization of the region and any attempts along that line probably will meet with strenuous opposition. Absence of labor troubles has been one of the outstanding features in this region and especially was this true during the war time production. Workers, too, are more than satisfied with these conditions and their opposition to union organization has been manifested on numerous occasions.

### Italian Emigration Increases

WASHINGTON, March 29.—Almost four times as many Italian emigrants went across the Atlantic in 1920 as in 1919, according to a report received by the Bureau of Foreign and Domestic Commerce from Assistant Trade Commissioner A. A. Osborne of Rome. Of more than 210,000, the total number, 169,379 set out for the United States as compared with 41,164 in 1919; 28,035 went to Argentina, as compared with 10,209; 8593 went to Brazil as compared with 4191 and 3325 went to Canada as compared with 518.

The overland emigrants went to France for the most part. That country took almost 120,000 out of something less than the 154,000 who crossed the frontiers; 19,931 went to Switzerland, 3331 to England and 739 to Germany.

### Wage Reductions for Many

The International Harvester Co. has announced wage and salary reductions of five to 20 per cent, affecting 47,000 employees. Officers of the company also state that current economic readjustment will probably necessitate temporarily laying off several thousand employees in various plants during the next 60 days. "We have timed this action to work the minimum of hardship," one of the leading officials said. "During the winter we had to economize to meet the lessening demand for our products, but by working men part time we avoided letting them out."

### In the Field of Labor

Practically all of the makers of boilers in the Pittsburgh district have inaugurated open shop working conditions following the refusal of the unions to accept a revision of wages, which eliminated an increase given the men last summer during the crest of high living costs, which, it is declared, was a bonus rather than a change in the scale. Inside men were given an increase of 7½c. per hr. and outside men one of 20c. per hr. No new wage scale was negotiated at the time, it is declared, but when the manufacturers recently sought to put wages back to the basis of the signed scale, the men quit work.

The plant of the American Steel & Wire Co. at Waukegan, Ill., has reduced its operations. Instead of running day and night shifts of nine and one-half hours each, the night shift has been abandoned in most departments and employees are working on an eight-hour shift. One group of employees will work the first three days of the week and another the last three days, so as to insure at least three days employment to the workmen. At Joliet also eight-hour shifts have been established in most departments and operations are on a four to five-day week basis.

## IRON AND INDUSTRIAL STOCKS

## Strength of the Automobile Shares the Outstanding Feature the Past Week

The strength displayed by automobile shares during the past week was the outstanding feature of the securities markets. The higher prices for such shares are based on the improvement in the automobile industry and a belief such manufacturers will be able to work themselves out of financial difficulties. Press reports telling of uprisings in Germany, of thousands of railroad workers being dismissed from employment, the discontentment of labor over lowering of wages, and prospects of national legislation, as well as other exasperating problems, naturally put a damper on investment buying of securities in general and at the same time produced irregular movements of market values. Yet on the whole, prices for stocks held up remarkably well. In cases where they are lower, they do not average more than a point below quotations named a week ago.

Interest in steel shares centers in United States Steel common. On the one hand there has been some selling by investors who believe the corporation within a comparatively short time must readjust its prices on products. Offsetting such selling there has been buying by people impressed with the corporation's 1920 report, which showed a working capital of \$596,000,000, the largest on record, which is not tied up in inventories as with many industrial concerns. The annual report of the Bethlehem Steel Corporation also is reassuring. The market for pig iron producing stocks is inclined toward softness, based on the lack of business and the possibility of companies being able to maintain dividends. Recent developments in the metal market have not encouraged reinvesting by people who sold their holdings some time ago.

The range of prices on active iron and industrial stocks from Saturday of last week to Monday of this week was as follows:

Allis-Chalm. com.	36 1/4 - 38	Midvale Stl. ....	29 7/8 - 30 5/8
Allis-Chalm. pf.	82 1/2 - 83	Nat. Acme .....	23 1/2 - 24 1/2
Am. Can. com. ....	29 1/4 - 30 3/4	Nat. E. & S. com.	60 - 62
Am. Can. pf. ....	84 1/2 - 85	Nat. E. & S. pf. .	92 - 92 1/2
Am. C. & F. com.	122 - 124	N. Y. Air Brake..	76 1/2 - 77
Am. C. & F. pf. .	111 1/2 - 112	Nova Scotia Stl..	33 3/4 - 38
Am. Loco. com. ....	85 1/2 - 88	Pittsburgh Stl. pf.	80 - 80 1/2
Am. Raditr. com.	70 1/4 - 75 1/4	Ry Stl. Spg. com.	86 - 87 1/2
Am. Stl. F. com. .	29 1/4 - 30 1/2	Replogle Stl. ....	24 - 26
Bald. Loco. com.	86 1/4 - 90 1/2	Republic com. ....	65 1/4 - 69
Bald. Loco. pf. .	99 1/2 - 100	Republic, pf. ....	93
Beth. Stl. com. ....	55	Sloss com. ....	42 - 44
Beth. Stl. Cl. B. .	56 1/2 - 59 1/2	Transue-Will. .	38 1/2 - 41
Beth. Stl. 8% pf.	104 1/2 - 105 1/2	Un. Alloy St. ....	31 1/2 - 31 3/4
Chl. Pneu. Tool. .	60 - 64 1/4	U. S. Pipe com. .	17 1/2 - 18 1/4
Cru. Stl. com. ....	86 1/2 - 91 1/4	U. S. Pipe pf. ....	49 - 50
Cru. Stl. pf. ....	88 - 88 1/4	U. S. Stl. com. .	80 - 82 1/2
Gen. Elec. ....	135 - 137 1/2	U. S. Stl. pf. ....	109 1/4 - 110
Gt. No. Ore Cert.	31 1/2 - 32	Vanadium Stl. ....	27 - 31 1/2
Int. Har. com. ....	96 1/4 - 97 1/4	Va. I. C. & Coke.	88 - 89
Int. Har. pf. ....	108	Westingh. Elec. .	47 - 48 1/2
Lackawanna Stl.	52 - 54 1/4		

## Earnings of Various Companies

The Norton Co., Worcester, Mass., has filed with the Commissioner of Corporations of that state a statement of its financial condition as of Dec. 31 last, which shows total assets and liabilities of \$21,251,328 as against \$19,524,131 at the close of 1919. The surplus at the close of 1920 stood at \$10,185,013, contrasted with \$8,706,407 at the end of the previous year, indicating net earnings of \$1,478,606 last year.

The 1920 income account of the Colorado Fuel & Iron Co. shows gross sales of \$51,812,813, or \$17,407,596 more than those for 1919. After all charges, including federal taxes, etc., there was a balance last year of \$1,286,806, contrasted with a deficit of \$577,645 for 1919. After paying \$160,000 in preferred dividends and \$1,026,994 in common dividends, the same amounts as disbursed in 1919, there was a surplus of \$99,812, contrasted with a deficit of \$1,764,639.

After depreciation, the reduction of inventory values and the estimated federal taxes, there was a profit of \$2,584,593 as against \$2,338,860 in 1919, according to the report of the American Brake Shoe & Foundry Co. for 1920, recently issued. The net earnings last year amounted to \$2,571,848, equivalent, after dividends on the subsidiary stocks and preferred shares, to \$13.08 a share on the \$148,410 outstanding common shares of no par value, or slightly more than the share earnings for 1919. The report shows a surplus for the year amounting to \$855,941, as against \$1,169,387 for the previous year.

The 1920 sales of the Kelsey Wheel Co., Inc., amounted to \$25,200,913, against \$21,843,160 and \$10,336,314 in 1919 and 1918, respectively. After all charges and preferred dividends, there was a balance or surplus of \$1,724,107 last year, contrasted with one of \$1,426,806 for 1919 and \$572,028 for 1918.

The net earnings of the Walworth Mfg. Co. for 1920, after taxes and preferred dividends, total \$718,471, which are equal to \$3.59 per share on the 200,000 common shares outstanding. In 1919 the company earned \$3.24 a share on its common stock, and in 1918, \$3.39. The report for last year shows \$438,471 carried to the surplus account, whereas in 1919 the surplus amounted to \$368,305. The working capital at the close of 1920 was \$4,950,069, as against \$4,795,568 at the close of 1919 and \$4,628,057 at the close of 1918.

President Howard Coonley, in his remarks to stockholders, says in part: "In order to create a better medium for handling our growing export business, as well as to bring about a closer co-operation with the other large manufacturers who distribute their merchandise in foreign fields through our agency, we have incorporated, under the laws of Delaware, the Walworth International Co., all the stock of which is held by your company. This corporation has already justified its separate existence."

Total earnings of \$6,499,908 are reported by Deere & Co. for 1920, contrasted with \$6,555,807 for 1919, and \$7,980,152 for 1918. The net earnings were \$4,647,718, \$5,257,177 and \$4,834,987, respectively, in 1920, 1919 and 1918.

A feature of the 1920 report of the Saco-Lowell Shops is the reduction in the Government securities item to \$498 from \$1,727,681 at the close of 1919, which shows at least one way the company raised ready cash. At the close of last year the company had \$1,043,133 cash on hand, as against \$618,439 on Dec. 31, 1919.

## BETHLEHEM EARNINGS

## Report for 1920 States That Sources of Raw Material Were Acquired and Developed

The sixteenth annual report of the Bethlehem Steel Corporation has been issued in pamphlet form. A preliminary report of earnings was published in THE IRON AGE of Feb. 3. According to Messrs. Schwab and Grace: "With the practical completion of the program for the enlargement and development of the steel plants of your corporation, the management has given especial consideration to the acquisition and development of properties for the supply of raw materials. The limestone properties of your corporation are now capable of supplying its entire requirements.

"During the year, approximately 7000 acres of bituminous coal lands, containing a proven quantity of at least 65,000,000 tons of very good quality low sulphur gas coal, was purchased from the Jamison Coal & Coke Co. The ore properties at Cornwall, Pa., and on the north and south coasts of Cuba now furnish a very substantial part of its requirements. The Chilean property has been developed and equipped with modern mining machinery, railroad transportation and shipping docks. The completion of ocean transportation facilities will make the ore from this property available and the corporation will then be able to obtain the greater part of its requirements from its own mines. It is confidently expected that the use of the Chilean ore will be very advantageous to the operations of the steel plants of your corporation."

The income account for 1920 is as follows:

Total net earnings after deducting taxes and expenditures for repairs and maintenance....	\$36 351,553.56
Less interest charges .....	7,951,203.47
	\$28,400,350.09
Deduct: Provision for depreciation, obsolescence and depletion .....	13,941,514.55
Net income for the year.....	\$14,458,835.54

The value of orders received and on hand for the past six years follows:

Year Ended	Received	On Hand
Dec. 31, 1915 .....	\$275,433,500.61	\$175,432,895.19
Dec. 31, 1916 .....	234,225,909.03	193,374,248.69
Dec. 31, 1917 .....	559,364,041.12	453,808,759.05
Dec. 31, 1918 .....	323,548,115.52	328,946,065.95
Dec. 31, 1919 .....	204,118,386.78	251,422,545.12
Dec. 31, 1920 .....	168,295,328.42	145,286,637.29

The number of employees and amount of pay rolls for the past ten years:

Year	Average Number of Employees in the United States	Salaries and Wages Paid in the United States
1911 .....	11,802	\$9,218,049.80
1912 .....	11,965	10,034,265.07
1913 .....	15,052	13,366,399.92
1914 .....	15,586	14,312,948.78
1915 .....	22,064	21,800,664.19
1916 .....	47,013	51,499,773.45
1917 .....	64,782	83,978,312.80
1918 .....	92,964	167,118,484.14
1919 .....	81,695	135,316,986.86
1920 .....	65,105	124,629,508.43
		Average Earning Per Hour
		1920 1919

All employees, in the United States, exclusive of general administrative and selling force. \$0.661 \$0.643

# Machinery Markets and News of the Works

## BUYING IMPROVES

### One Large Dealer Reports 25 Per Cent Gain in March Over February

#### Trade Is Encouraged by the Slow But Steady Gain in Automobile Manufacturing

Realizing that it was the automobile industry which led the way out of the post-war business depression of 1919, the metal-working industries now are deriving considerable encouragement from the slow but steady improvement in manufacturing operations among automobile companies. The announcement that the Ford plant at Detroit is now on a six-day week, with an output of 3000 cars a day, and the knowledge that other automobile companies are also making a gain has created hope of better business among manufacturers identified with the automobile industry.

While not much machine-tool business is expected directly from automobile manufacturers this year, the improved conditions in that industry have created a decided feeling of encouragement, especially in that territory lying between Cleveland and Chicago.

March machine-tool business, according to one seller whose operations are country-wide, was 25 per cent better than that of February, though March of this year makes a very sorry showing compared with March, 1920.

Improvement in buying continues on a moderate scale. At Cincinnati a fairly good business was done

last week, particularly in engine lathes and milling machines. The orders were scattered, coming from all sections of this country, but particularly the Central West and Pacific Coast, and there were some export orders from Japan. An inquiry for 15 engine lathes was received at Cincinnati from a Pacific Coast dealer.

Not too much expectation of early railroad buying is being entertained, but inquiries now in the market are said to indicate only in small measure the actual requirements of the roads. A real buying movement is expected when the labor and financial situation has been remedied, which may not be for several months. The Big Four has asked for new bids on an old list, and it is expected that all or a part of this business may be placed soon. The Illinois Central is reported to have placed several tools and may soon purchase the engine lathes on its recent list. At Chicago shipping instructions have been given on several tools bought a few months ago by the Chicago, Milwaukee & St. Paul.

Pittsburgh dealers expect inquiries soon from the International Nickel Co., which has let contracts for its new plant at Huntington, W. Va. Seven cranes are to be bought, probably this week, and machine tools and other shop equipment will come later. The West Penn Power Co. has an inquiry out at Pittsburgh for a half dozen tools.

Bardons & Oliver have reduced prices on turret lathes. The Ajax Mfg. Co., manufacturer of forging machines, announces a 10 per cent price reduction. The Sidney Machine Tool Co., Sidney, Ohio, advises that the report that it has reduced prices on its line of wood-working machinery is incorrect.

## New York

NEW YORK, March 29.

Price reductions have now become quite general on the principal types of standard tools. The reduction by some lathe manufacturers, mentioned a week ago, seems now to have affected nearly all of the leading makes.

The situation as to business has not changed materially within the past week, except that there appears to be a continued slight improvement in orders for single machines. One large New England tool builder feels so much encouraged by the outlook that its men are being put back on the road. For some months they have been doing practically no traveling.

Three large lists printed in recent issues of THE IRON AGE are still pending. The American Sugar Refining Co., which inquired for about 50 machines for a repair shop at Baltimore, may begin its buying this week. The purchasing department of this company advises THE IRON AGE that its selection of tools has been completed and that it is not in a position to consider further proposals. The General Electric Co., Schenectady, N. Y., whose list of about 30 tools was published last week, may scale down its requirements by moving machines from one department to another at Schenectady. No orders have been placed here as yet by the Batavia Car Works, Inc., Batavia, N. Y., which inquired a few weeks ago for about 25 or 30 tools.

While no crane orders of any size have been placed the past week, there are several good lists pending. The list of three 5-ton hand-power cranes and a 5-ton and 10-ton electric crane for the new plant of the Easton Structural Steel Co. will probably be placed next week. The International Nickel Co., 43 Exchange Place, New York, which awarded the structural steel for its new plant last week, will probably take action on its crane inquiry within the

next two weeks. The following companies recently in the market for locomotive cranes have purchased second hand: Newark Lumber Co., Harrison, N. J., formerly the Harrison Supply Co.; American Radiator Co., Buffalo, N. Y., which inquired for a 20-ton, 60-ft. boom crane, and the U. S. Metals Refining Co., Chrome, N. J., which inquired for a used crane mounted on caterpillar tread. The Union Tank Car Co., 21 East Fortieth Street, New York, has postponed purchasing.

The Industrial Works, Bay City, Mich., has sold a 150-ton wrecking crane mounted on six-wheel trucks to the Florida East Coast Railroad for shipment to Florida. F. M. Talbot, 2 Rector Street, New York, has purchased a used 25-ton, 70-ft. boom Ohio locomotive crane from Dwight P. Robinson & Co., Inc.

The General Optical Co., 256 Washington Street, Mount Vernon, N. Y., will take bids early in April for a one-story and basement addition, 30 x 200 ft., to cost about \$75,000. Precision machinery and other equipment will be installed. Woodwell & Resler, 501 Fifth Avenue, New York, are engineers.

The Perfect Windshield Mfg. Corporation, New York, has been incorporated with a capital of \$50,000 by S. Marion, A. Papp and J. Gabriel, 421 East Sixty-fourth Street, to manufacture metal-frame windshields.

The Rowan Machine & Foundry Co., Brooklyn, has been incorporated with an active capital of \$55,000 by E. M. Schmidt, E. N. Rowan, Sr., and E. N. Rowan, Jr., 418 Elmwood Avenue, to manufacture castings and other iron and steel products.

Joseph Stolz & Son, Inc., New York, operating an iron works at 1122 Forest Avenue, has filed plans for a one and one-half story addition, 60 x 150 ft., at its branch plant at 841 East 136th Street, to cost about \$25,000.

Charles Tisch & Co., Inc., Brooklyn, has been incorporated Vernon, N. Y., will take bids early in April for one-story



Tisch, 31 Irvington Place, to manufacture stoves, furnaces, etc.

The Department of Plants and Structures, Municipal Building, New York, Grover A. Whalen, commissioner, is completing plans for a new one-story machine repair works and automobile service building for city cars, 95 x 197 ft., at Goerck and Mangin streets, estimated to cost about \$75,000.

The Port Chester Aluminum Foundry, Inc., Port Chester, N. Y., has been incorporated with a capital of \$50,000 to manufacture aluminum and other metal castings. Arthur W. Britton, 34 Cedar Street, New York, represents the company.

The Laminated Shim Co., Inc., 47 West Thirty-fourth Street, New York, manufacturer of automobile equipment, has acquired a two-story factory, 150 x 200 ft., on Fourteenth Street, Long Island City, for a new works. It has heretofore been held by the George W. Copp Co., manufacturer of similar products.

The H. M. N. Auto Radiator & Sheet Metal Works, New York, has been organized by J. F. Hayes, W. S. Miller and H. Newman, 2700 Albemarle Road, Brooklyn, to manufacture automobile radiators and other metal products.

The Cornell Utilities Co., New York, has been incorporated with a capital of \$600,000 by E. Slosson, H. G. Davis and G. W. Epton, Kew Gardens, N. Y., to manufacture oil-burning equipment, heating apparatus, etc.

The Linde Air Products Co., 30 East Forty-second Street, New York, will defer the erection of its proposed one-story plant, 100 x 100 ft., at Westhall Street and Preble Avenue, Pittsburgh.

The Trialtch Auto Motive Specialties Co., Brooklyn, has been incorporated with a capital of \$100,000 by E. A. Gersbach, A. Lemlein and P. Lewinson, 2059 Davidson Avenue, to manufacture machinery and appliances.

The Jespersen Newsprint Corporation, New York, recently organized, is planning the establishment of a new paper mill with daily capacity of about 30 tons, to be equipped for production under the Jespersen chemical and mechanical process. Other mills will be established at an early date. The company has arranged for a preferred stock issue of \$500,000 for initial operations. Fremont W. Spicer, vice-president of the Fourth Estate, 232 West Fifty-ninth Street, is secretary of the company.

The Superior Steel Door & Trim Co., New York, has been incorporated with a capital of \$100,000 by L. B. Lebovitz, W. F. Brown and E. Boucher, 1144 Eighty-fourth Street, Brooklyn, to manufacture steel doors, sash, etc.

The Bart Corporation, Piermont, N. Y., has been incorporated with a capital of \$400,000 by George W. Case and Albert M. Austin, Piermont, and Warren S. Orton, East Orange, N. J., to manufacture metal products.

The Walsh Duplicator Co., New York, has been incorporated with a capital of \$100,000 by S. Bell, J. A. Murphy and V. F. Walsh, 152 West Ninety-first Street, to manufacture duplicating machines and parts.

The Miniature Breaker Co., New York, has been organized by F. A. Cole and C. H. Aborn, 45 John Street, to manufacture circuit breakers and other electrical equipment.

The Empire Collapsible Core Co., Inc., Utica, N. Y., has been incorporated with a capital of \$200,000 by T. L. Wilder, 1533 Taylor Avenue, and associates, to manufacture collapsible cores for paper machinery rolls and kindred mechanical specialties.

Machinery for material handling, including loading and unloading equipment, hoisting and conveying apparatus, etc., will be installed in two new warehouses to be erected on Staten Island, N. Y. Contracts for both buildings have been let to the Turner Construction Co., 242 Madison Avenue, New York. The first will comprise a seven-story terminal warehouse, 120 x 160 ft., at Clifton, for the Pouch Terminal Co., 17 State Street, New York, and the other for an affiliated interest, the American Dock Co., 17 State Street, at Tompkinsville, S. I., of like size. Construction of the first mentioned will commence in April, and the second, early in May.

The International Combustion Engineering Corporation, New York, has acquired control of the Combustion Engineering Corporation, 11 Broadway, and the Underfeed Stoker Co., Ltd., London, England. The interests will be operated jointly by the International company.

The Fuel Oil Corporation, Brooklyn, has been incorporated with a capital of \$2,000,000 by John J. Dobson, 291 Adams Street, and associates, to manufacture oil-burning devices and equipment, and other mechanical specialties.

The George W. Copp Co., 518 West Fifty-eighth Street, New York, manufacturer of automobile bodies and automotive equipment, has purchased a two-story building on Fourteenth Street, Long Island City, in the vicinity of its present branch works, 140 x 200 ft., comprising about 60,000 sq. ft., for extensions.

The Fords Foundry Co., Perth Amboy, N. J., has been incorporated with a capital of \$50,000 by Owen J. Caulfield and Alexander Balint, Jr., 175 Smith Street, to manufacture iron and steel castings, cast tools, etc.

The Public Service Gas Co., Public Service Terminal, Newark, N. J., will build a new machine shop and forge shop at St. Paul's and Duffield avenues, Jersey City, N. J. Plans have been completed.

A portion of the new foundry of the Florence Pipe Foundry & Machine Co., Florence, N. J., was destroyed by fire, March 18. The company will replace the loss at once, and will continue operations so far as possible in the undamaged part of the structure.

The Hydro-Electro Pyro Co., Jersey City, N. J., has been incorporated with a capital of \$200,000 by Alfred H. Francfort and Paul Andreae, 52 Warner Avenue, to manufacture hydraulic machinery and operate a repair works.

The Enamel Brick & Tile Co., Old Bridge, N. J., has completed plans for a new one-story machine shop, 50 x 80 ft., and will commence construction at an early date.

The Industrial Molded Materials Co., Woodbury, N. J., has been organized to manufacture mechanical and engineering specialties. It is headed by Harry M. Dent and Robert G. Griswold.

The Bureau of Yards and Docks, Navy Department, Washington, is planning for the construction of an electrically operated pumping plant at its new aircraft works at Lakehurst, N. J.

The Consolidated Foundry Supply Co., Jersey City, N. J., has been organized by W. H. Fitzpatrick and W. George, 75 Montgomery Street, to manufacture foundry equipment and supplies.

The United States Aluminum Co., Pittsburgh, will defer operations at the addition to its plant at Edgewater, N. J., recently completed at a cost of about \$1,000,000. Curtailment is also being effected in other branches of the local works. The normal working force of about 6000 has been reduced to approximately 1500.

The Luckenbach Steamship Co., 44 Whitehall Street, New York, has organized the Luckenbach Terminals, Inc., for the construction of its proposed new freight terminal at Bulls Ferry, on the Hudson River, near Edgewater, N. J. Preliminary plans are under way for the buildings, to include the installation of cranes, loading and unloading machinery, conveying equipment, etc. The terminal, complete, is estimated to cost close to \$10,000,000.

The Unexcelled Mfg. Co., Westside Avenue, Jersey City, N. J., manufacturer of signal lighting equipment, has placed its local plant on the market, comprising about 14 acres with several one-story brick buildings and power plant. The buildings aggregate about 60,000 sq. ft.

The Hanson & Van Winkle Co., 269 Oliver Street, Newark, N. J., manufacturer of electric motors, parts, etc., has filed plans for extensions and improvements to cost about \$25,000.

The A. H. W. Carburetor Co., Newark, has been incorporated with a capital of \$200,000 by Leroy St. Jacques, Arthur H. Webber and Eric T. Frazen, 253 Jefferson Street, to manufacture carburetors and ignition equipment for automobile service.

The Amalgamated Iron & Steel Co., Market and Halsey streets, Newark, has filed notice of organization to manufacture iron and steel products. Irving N. Schafman, 212 Elizabeth Avenue, heads the company. Mr. Schafman also heads the Bolt Nut & Rivet Co., organized to manufacture bolts, nuts, rivets, etc., and the Ampere Boiler & Tank Co., to operate a steel plate works for the manufacture of boilers, tanks, etc.

The New Jersey Lamp Works, 21 William Street, Newark, operated by Mauer Brothers, are taking bids for a two-story top addition, 25 x 28 ft.

The National Machine & Tool Co., 15 Kirk Place, Newark, has been acquired by Charles Eisler, 159 Clifton Avenue, consulting engineer, and the name changed to the Charles Eisler Engineering Co. It will specialize in the manufacture of gear testing machinery and precision equipment, as well as special machinery.

The Newark Thermostat Co., Inc., Newark, has been incorporated with a capital of \$100,000 to manufacture mechanical and electrical devices. It is represented by Harry H. Picking, Savings, Investment & Trust Co. Building, East Orange, N. J.

The Newark Ignition Co., Newark, N. J., has been incorporated with a capital of \$125,000 by Joseph M. Maier, Jacob Lubetkin and Harry Landskroner, 32 William Street, to manufacture magnetos and ignition equipment.

Carl H. Wolf, Inc., Newark, has been incorporated with a capital of \$50,000 by S. C. Diexel, Hugo C. and Carl H.

Wolf, 690 Market Street, to manufacture metal products. Edward R. McGlynn, 810 Broad Street, represents the company.

The Centrifugal Fan Co., Newark, has been organized by Arthur E. Egner and Gottlieb Yunker, 9 Seventeenth Avenue, to manufacture mechanical fans and parts.

The National Chain Co., College Point, L. I., will enlarge the two-story factory on Terry Street, Belleville, N. J., recently acquired, and has plans under way. The structure is 40 x 140 ft., and heretofore has been held by the Belleville Products Co. Equipment will be installed for the manufacture of brass, steel-finish and other chains.

The Consolidated Gas Iron Co., 120 Market Street, Newark, has filed notice of organization to manufacture gas irons and kindred products. Benjamin Weisberg, 616 East 158th Street, New York, heads the company.

## New England

Boston, March 28.

Scattered sales of used upright drills, lathes, presses, etc., were made the past week, but the local market for new machines is quiet. March sales of the leading machine tool houses will compare favorably with those of February, due largely to bookings of small tools, but contrasted with March, 1920, the showing is unsatisfactory. Inquiries for grinding machines and other equipment, noted early in the month, apparently have been abandoned temporarily, and aside from a lot of 30 14-in. and 16-in. lathes, under negotiation by an automobile accessories manufacturer, no large order is visible. The Boston & Albany Railroad has purchased a 24-in. Ryerson lathe, but has not covered on its planer requirements and is considering the purchase of another lathe.

Operations at many plants are decreasing rather than increasing, the Becker Milling Machine Co., Hyde Park, Boston, being among those practically suspending operations. A 60-in. planer in this plant offered for sale started a rumor that the entire equipment is to be sold, but, according to officials of the company, there is no foundation for this story. On the other hand, Churchill-Morgan-Crittisner, Inc., Worcester, Mass., is taking on extra workmen.

Following a cut of 10 per cent in prices by a leading Eastern manufacturer of lathes, a large Middle West manufacturer has made a similar reduction. A Western maker of milling machines has also announced a drop of 15 per cent in quotations. The Wright Mfg. Co., Lisbon, Ohio, has reduced prices on its line of chain hoists and an Eastern manufacturer of blowers, vacuum pumps, oil systems, sand blasts and similar foundry equipment has also reduced prices.

Drills purchased in 1920 by British interests have been reshipped to this country and are offered as low as 80 per cent discount. Notwithstanding these offerings, domestic manufacturers are maintaining prices.

The demand for machine screw products has dropped to small proportions. A New Haven company, however, is bidding on a large order in competition with British interests, which, if secured, will keep its plant operating at capacity four months.

Pipe cutters are in demand; one Connecticut manufacturer who is behind on deliveries is working several nights each week.

Aside from an inquiry from Cape Cod for a small crane, this market is stagnant.

The Builders Iron Foundry, Providence, R. I., has canceled a contract for a new machine shop on Kinsley Avenue.

The George Grow Tire Co., Canton, Mass., is planning an addition which will give 16,500 ft. additional manufacturing space.

Contract will soon be let for a one-story addition, 90 x 320 ft., to the plant of the Smith Springfield Body Co., West Springfield, Mass., automobile bodies.

The Frey Variable Speed Gear Co., Holyoke, capitalized for \$50,000, has been incorporated under Massachusetts laws. Ellsworth Frey, Springfield, is president, and Charles H. House, Chicopee, treasurer.

A Massachusetts charter to manufacture a fire escape chair has been granted the Davis Safety Device, Inc., Cambridge. Hanley M. Davis, 19 Murdock Street, is president, and Andrew J. Murphy, 25 Pleasant Street, treasurer.

Through the offices of Warren F. Freeman, 15 State Street, Boston, negotiations are in progress for the purchase of the one-story foundry, 50 x 146 ft., of the International Piano Mfg. Co., Fall River, Mass. The equipment recently was sold at auction.

Thomas Clark, 10 Lorrain Terrace, Allston, is president, and Foster J. Findley, 241 Everett Street, treasurer, of the Clark, Hunter Co., Boston, capitalized for \$100,000, which

has taken out a Massachusetts charter to manufacture Dunwell bench grinders, etc.

The Roberts Mfg. Co., New Haven, Conn., formerly manufacturer of tools, has revamped its production equipment and is producing sizes to fit any automobile and all metal non-glare windshield visor, with curtain. It plans to install an enameling department in the immediate future.

The Curtis & Marble Machine Co., Worcester, Mass., has taken over the patterns, drawings, etc., used in the manufacture of Woonsocket cloth trimming or inspection machines for cotton mills, as well as Woonsocket double rotary cloth press, for woolen and worsted mills. New presses of this type will not be built, but the company will furnish brass and copper jackets for them and any other parts for which patterns are available.

The Richard H. Long Co., Framingham, Mass., next month plans to start the erection of two six-story buildings, 75 x 600 ft. and 75 x 300 ft., respectively, with an addition, 75 x 100 ft., on the 45-acre site on Millbrook Street, Worcester, Mass., purchased about a year ago. One of the structures will be used for the manufacture of automobile bodies.

The Chapman Valve Co., Indian Orchard, Mass., manufacturer of heavy type gate valves, etc., is taking bids for the construction of its brick and steel foundry addition, one-story, 50 x 270 ft., with two ells, each 20 x 80 ft.

Connecticut Gears, Inc., Waterbury, Conn., has been incorporated with a capital of \$50,000 by C. C. Hincks, W. E. Thomas and Tyler Clark, 545 Cooke Street, to manufacture gears and transmission systems.

The Shea-Clancy Castings Co., 230 Fifth Street, Bridgeport, Conn., has filed notice of change of name to the Shea Foundry & Machine Co., to manufacture iron castings, forgings, etc. J. F. Shea is president and treasurer.

Fire, March 22, destroyed a number of buildings at the plant of the Presbrey Stove Lining Co., Weir Village, Taunton, Mass., manufacturer of firebrick and special refractory shapes, with loss estimated at about \$100,000, including equipment.

The Lanyon Mfg. Co., New Haven, Conn., has been incorporated with a capital of \$100,000 by R. M. Lanyon, C. S. Reed and B. E. Hoffman, 867 Congress Avenue, to manufacture screw machine products and automobile parts.

The Hub Steel & Iron Works, Boston, has filed notice of organization to manufacture iron and steel products, and operate a general iron works. Samuel Waxman, 41 Way Street, heads the company.

Coleman & Gilbert, 331 Huntington Street, Allston, Mass., have completed plans for a two-story automobile service and machine works on Brighton Avenue, to cost about \$100,000.

The New Haven Millwrighting Co., New Haven, Conn., recently organized, has arranged for the establishment of its new plant in the Wood Building, 6 Church Street, to specialize in machinery and parts production, millwrighting, etc.

## Philadelphia

PHILADELPHIA, March 28.

The Bridgman Brothers Co., 120 South Thirtieth Street, Philadelphia, steam specialties, fittings, etc., has awarded contract to the Wark Co., 231 South Broad Street, for a one-story addition, 110 x 200 ft.

The Philadelphia Gear Works, Inc., 1120 Vine Street, Philadelphia, has filed plans for an addition, 14 x 56 ft., on Tioga Street.

The Asbestos Insulation & Roofing Co., Philadelphia, has been incorporated with a capital of \$25,000 to manufacture asbestos products. W. G. Dickinson, 4229 North Sixth Street, is treasurer.

The Federal Metal Bed Co., 816 Clinton Street, Hoboken, N. J., has leased property at Tenth and Diamond streets, Philadelphia, totaling about 20,000 sq. ft., for a branch establishment.

The United States Government, Quartermaster Department, Philadelphia, is taking bids for the construction of a new power house at Twenty-first and Oregon streets.

Fire, March 21, destroyed the building at Twelfth and Buttonwood streets, Philadelphia, occupied by Charles Klause, manufacturer of brass fixtures, lamps, etc.; National Abrasive Mfg. Co., abrasive materials, and William Haines, manufacturer of steam traps and similar specialties. The loss is reported unofficially at about \$100,000.

The P. & H. Pattern & Foundry Co., Trenton, N. J., has been incorporated with a capital of \$125,000 by Wilbert H. and E. R. Patten and John J. Hornyak, Third and Schenck streets, to manufacture iron and steel castings, molds and other mechanical specialties.

About \$100,000 will be expended for machinery and equip-



ment by the American Rotex Mfg. Co., Cleveland, for installation at its new imitation leather manufacturing plant at New York Avenue and Mulberry Street, Trenton, N. J. A. M. Mander is president.

Freight-handling machinery will be installed in the new one-story building, 72 x 462 ft., to be constructed by the city of Camden, N. J., at Spruce Street and Delaware Avenue, estimated to cost \$136,000. Work will commence at once. George N. Bradley is chairman of the Harbor Commission.

The Tunnessen Mfg. Co., Seventh and McKinley streets, Hazleton, Pa., manufacturer of metal mine lamps, etc., has filed plans for its one-story addition, 48 x 172 ft., to cost about \$50,000. Work will begin at once.

The Union Petroleum Co., 17 Battery Place, New York, has acquired about 200 acres on the Delaware River in the vicinity of Marcus Hook, Pa., and is reported to be planning for the erection of a new oil refinery. It is a subsidiary of the Sinclair Consolidated Oil Corporation, 120 Broadway, New York.

The Frick Co., Waynesboro, Pa., manufacturer of machinery and parts, is planning for the construction of a new one-story foundry for the manufacture of iron castings, and a number of other extensions. It recently increased its capital from \$2,000,000 to \$5,000,000.

## Cincinnati

CINCINNATI, March 28.

Improvement in the machine-tool market continued the past week, and several orders for engine lathes and milling machines were booked by manufacturers in this section. One company has received orders from widely scattered points, including the Eastern coast and Japan. Some local business in gear cutters, punches and shears and small tools was also booked the past week. Although the number of orders received does not begin to compete with the same period last year, they are encouraging compared with the first two months of this year. An inquiry for 15 engine lathes from a dealer on the Pacific Coast was received by several local manufacturers. The Big Four Railroad has asked for revised bids on the list issued last fall, and it is expected that part of this business will shortly be placed. The Illinois Central Railroad is reported to have closed on a few tools, and is expected to purchase during the week the engine lathes on its list. Some manufacturers of engine lathes in this district reduced prices approximately 10 per cent the past week and others are expected to follow.

The Turnbull Wagon Co., Montpelier, Ohio, has been incorporated with a capitalization of \$300,000 by A. J. Brown, G. G. Stahl, A. E. Kaufman, A. J. Colt and W. F. Vernier.

The Ohio Novelty Co., Cincinnati, recently organized to manufacture toys, has leased a three-story building at the corner of Front and Vine streets and will commence operations about April 15.

The S. R. Costley Foundry Supply & Equipment Co., Columbiana, Ohio, has been incorporated with a capitalization of \$50,000 by C. Frederick, M. L. McFadden, T. A. Renkenberger, E. T. Coyle and E. M. McFadden, all of Columbiana.

## Cleveland

CLEVELAND, March 28.

Sentiment in the machinery market has improved and there is some gain in the volume of small inquiries. Sales are still limited mostly to single machines. The increased activity in the automotive industry has brought out a little business, but not much is expected from this source this year. The Buick Machine Tool Co., Flint, Mich., has placed several drilling machines with a local manufacturer, and the Ohio Crankshaft Co., Cleveland, has released several lathes ordered some time ago and is inquiring for two automatic machines. The Hobart Mfg. Co., Troy, Ohio, is purchasing some additional machine equipment. Considerable resale machinery is appearing on the market, being offered by companies which purchased this equipment several months ago and now find they will have no use for it. Some has never been uncanted. Practically no business is coming from the railroads.

The Ajax Mfg. Co., Cleveland, has reduced prices 10 per cent on its line of forging machinery, and Bardons & Oliver, Cleveland, builders of turret lathes, have made reductions on all types of machines. A local manufacturer of drilling machines, who has not reduced quotations, is guaranteeing present prices for six months.

The Sidney Machine Tool Co., Sidney, Ohio, advises that the report that it has reduced prices on its line of wood-working machinery is incorrect.

Plans are under way to organize the Toledo Boiler Mfg. Co., Toledo, with a capital stock of \$100,000 and to purchase the McNaull Boiler Mfg. Co. Richard Reeves, vice-president and general manager of the McNaull company, is interested.

The production of the present McNaull plant will be increased.

H. L. Coit, Indianapolis, Ind., and others are interested in a new company which, according to present plans, will be organized in Montpelier, Ohio, with an authorized capital stock of \$300,000 to manufacture farm wagons.

The Findlay Engineering Co., Findlay, Ohio, is considering removing its plant to Bucyrus, Ohio.

The Canton Pattern Co., Canton, Ohio, has added a foundry department to its business and will manufacture gray iron and semi-steel castings. It was organized about a year ago with capital stock of \$100,000. Theodore M. Dubs is president.

The Kearns-Gorsuch Glass Co., Barnesville, Ohio, a subsidiary of the Hazel-Atlas Glass Co., Wheeling, W. Va., is planning to rebuild the portion of its plant destroyed by fire, March 3, with loss estimated at \$500,000, including machinery.

Mechanical and electrical machinery, including power plant equipment, will be installed in the new plant to be erected by the Farmers' Sugar Co., Defiance, Ohio, estimated to cost about \$1,000,000, complete. A. H. Smith, 215 Nasby Building, Toledo, Ohio, is engineer. Charles H. Allen is president.

The Universal Crane Co. announces the removal of its business from Cleveland to its new factory at Elyria, Ohio, construction on which has just been completed. The company has greatly increased its capacity and production is now under way. The move from Cleveland was made by motor truck so as to eliminate delay and loss in production.

## Pittsburgh

PITTSBURGH, March 28.

Now that the International Nickel Co. has placed the contract for the building for its new sheet mill at Huntington, W. Va., it is expected that orders for cranes and other equipment will be placed soon. Seven cranes are wanted for this project. The company recently requested prices on these cranes without motors and this caused a number of makers who had bids in to withdraw from the competition. No other important crane business is in sight, though a fair number of requests for quotations for estimating purposes have been received. The only award reported was a 7½-ton overhead for the Hewitt Rubber Co. for its Buffalo works, which went to the Northern Engineering Works, Detroit.

Machine-tool dealers still are figuring on a number of inquiries, which are generally only for single tools. The only important list recently received was from the West Penn Power Co., which is seeking two lathes, a radial and an upright drill, a pipe machine and a motor-driven grinder and a motor-driven shaper. Railroad inquiries still are conspicuous by their absence. No further price changes have been reported. Electrical equipment is not moving with any considerable freedom. Business is better in the prospective than the actual, though the Allis-Chalmers Mfg. Co., through its Pittsburgh office, has just secured two high torque synchronous mine fans, one of 600-hp. and the other of 350-hp., direct connected, from the Cambria Steel Co. for its coal subsidiary.

The Homestead Valve Mfg. Co., Homestead, Pa., has plans under way for a new three-story machine shop to cost about \$150,000 with equipment. C. N. Hoggart, Fourth Avenue, Pittsburgh, is the architect.

The Pittsburgh Gas Appliance Mfg. Co., Pittsburgh, has been organized to manufacture gas-operated equipment and appliances. It is headed by Robinson Showalter, 1415 Park Building.

The Standard Sanitary Mfg. Co., Pittsburgh, manufacturer of sanitary ware, has closed negotiations with the Pennsylvania Light, Heat & Power Co. for the purchase of property at Ontario Avenue and Margaret Street, Northside, for proposed extensions.

The Sutton Building Corporation, Sutton, W. Va., recently organized, is planning for the establishment of a local plant for the manufacture of brick and tile. Benton B. Boggs, president, is in charge of the project.

The Sutton Chemical Co., Sutton, W. Va., will commence the immediate erection of a new electric power plant in the vicinity of its coal mines in Wolf Creek, in Braxton County, recently acquired.

The United States Stamping Co., Moundsville, W. Va., has been incorporated with a capital of \$1,000,000 by J. M. Saunders and J. A. Boyd, Moundsville, and William L. Gilleland and H. C. Ogden, Wheeling, W. Va., to manufacture stamped metal products.

The Logan Ice & Storage Co., Logan, W. Va., is planning for the installation of new electric motors and other equipment in an addition, 110 x 125 ft., to be constructed. G. R. Travis is president and general manager.

Extensions and improvements to cost about \$75,000, in-



cluding the installation of new machinery, will be made at the Clarksburg, W. Va., plant of the Interstate Glass Co., Bradford, Pa. H. J. Walters is head.

## Chicago

CHICAGO, March 28.

Buying is at a minimum and consists almost entirely of single machines, often second-hand. Although it is undoubtedly true that some consumers are delaying purchases in the hope that further price reductions will be made, the main reason for current inactivity is that the operations of users are not such as to warrant further purchases at this time while, in some cases, lack of liquid capital is the deterrent factor. The principal source of encouragement to sellers is that users who, a month or two ago, would not even discuss additions to present equipment, are now at least giving consideration to the matter. Shops which have been identified with the automobile industry, are commencing to look forward to better business as a result of the slow but steady increase in the output of automobile plants. Little further railroad buying is looked for until the carriers reach some settlement with their employees regarding wages. The Chicago, Milwaukee & St. Paul has authorized the shipment of a few tools, including a boring mill and an engine lathe, which it bought several months ago, and on which it later asked suspension of delivery.

The largest purchase of machines reported the past week was made by the United States Lock Nut Corporation, Chicago, and included a drill press, a 14-in. engine lathe, a No. 1 universal milling machine, and a 16-in. shaper. Only one additional price change has been announced, namely by the Greaves-Klusman Tool Co., Cincinnati, which has reduced its engine lathes 10 per cent.

Sales totals for March will be far below normal. Nevertheless one leading seller, whose operations extend over the entire country, reports that the month's business will be 25 per cent larger than that booked in February.

The Wittenmeier Machinery Co., 850 North Spaulding Avenue, Chicago, has let contract for a one-story machine shop, 28 x 113 ft., to cost \$12,000.

Frank J. Riha, 2609 South Kedzie Avenue, Chicago, has let contracts for a one-story automobile repair shop, 36 x 48 ft., to cost \$3,500.

The United Surgical Appliance Co., 727 West Madison Street, Chicago, has been incorporated with \$25,000 capital stock to manufacture surgical instruments, hospital and invalid supplies, etc. The incorporators include Frederick M. Lee, Ernest D. Douglass and L. Millard.

The plant of the F. C. Austin Machinery Co., Winthrop Harbor, near Waukegan, Ill., was damaged by fire on March 22, the loss being estimated at from \$100,000 to \$150,000.

The B & B Tool & Machine Works, Inc., 549 West Washington Boulevard, Chicago, has been incorporated with \$20,000 capital stock by Edward S. Band, Walter T. Golwitzer and Henry M. Lockwood to manufacture tools, machines, etc.

The Speed King Mfg. Co., 29 East Madison Street, Chicago, has been incorporated with \$15,000 capital stock to manufacture dispensers, drink mixers, soda fountain accessories, etc. The incorporators include D. W. Kahane, William Kahl and Joseph A. Franklin.

The Chicago Steel Tread Co., 69 West Washington Street, Chicago, has been incorporated by Arthur L. Woodbridge, David H. Dernehl and William C. Schmitz to do a general manufacturing and contracting business.

The Dubuque Boat & Boiler Works, Dubuque, Iowa, has been awarded contract to construct a twin-motor ferry boat to be used between McGregor, Iowa, and Prairie du Chien, Wis. It will be 64 ft. long, with a 20-ft. beam.

Schmook's foundry and machine shop, Springfield, Mo., has been completed and has poured its first metal. It will have a capacity of 10 tons of iron per day and will employ 35 to 40 men.

The Christopher Motor Co., 3812 Sheffield Avenue, Chicago, has completed plans for a one-story automobile service and repair building, 100 x 210 ft., at 5051 Broadway, to cost about \$125,000 with equipment.

The Samuel Bingham & Sons Mfg. Co., 609 Chestnut Street, Des Moines, Iowa, manufacturer of printers' rollers, etc., has awarded contract to Samuel Anderson, 833 Sixth Avenue, for a new three-story plant at 1027 West Fifth Street, 50 x 120 ft., to cost about \$40,000.

The Camp Mfg. Co., Washington and Wood streets, Chicago, has been incorporated with a capital of \$30,000 by Samuel B. Wagner, Peter Sweitzer, Jr., and Emanuel Garber, to manufacture iron and steel castings, saws and other mechanical products.

The Sellers Mfg. Co., 332 South Michigan Avenue, Chi-

cago, manufacturer of railroad supplies, is having plans prepared for a one-story addition 100 x 150 ft., at 4651 Pensacola Street, to cost about \$100,000. H. D. Hudson, 2047 Ogden Avenue, is engineer.

The D. O. James Mfg. Co., 1120 West Monroe Street, Chicago, manufacturer of cut gears and other transmission equipment, has selected Ronneberg, Pierce & Hauber, architects, 10 South La Salle Street, to prepare plans for its new six-story and basement addition, 50 x 125 ft., estimated to cost about \$200,000.

The Ray Puncture Proof Tire Co., Room 769, 322 South Michigan Avenue, Chicago, has been incorporated with a capital of \$1,000,000 by Harry C. Rowe, William F. Ray and George H. Bryant, to manufacture automobile tires.

The North American Car Co., 328 South La Salle Street, Chicago, is completing plans and will soon call for bids for a new one-story car shop, at 135th Street and California Avenue, to cost about \$50,000. H. G. Tregillus, 5 North La Salle Street, is engineer.

The Imperial Japanning & Enameling Co., 498 West Grand Avenue, Chicago, has awarded contract to Holton, Seelye & Co., 140 South Dearborn Street, for the new one-story and basement plant, 48 x 200 ft., at 1644 West Austin Avenue, estimated to cost about \$42,000. William Link is general manager.

The Ideal Vulco-Roll Co., 215 West Superior Street, Chicago, has been incorporated with a capital of \$50,000 by Oscar Linder, Walter Schuttler and C. K. Knickerbocker, to manufacture printing press rollers and kindred equipment for other machinery.

The American Fuel Generator Co., 903 Lumber Exchange Building, Chicago, has been incorporated with a capital of \$250,000 by Albert C. Bell, Howard R. Bruah, and James B. Veitch, to manufacture fuel generators and other machinery.

## Baltimore

BALTIMORE, March 28.

The Maryland Flint & Feldspar Co., Belair, Md., has acquired the property of the Husband Flint Products Co., in Harford County, including about 140 acres of land with mill and other buildings. The new owner is planning for a number of extensions and improvements, with installation of new equipment, estimated to cost about \$150,000. C. L. Gray is president of the Maryland company.

The American Thermostatic Co., Charlotte, N. C., recently organized, has arranged for the establishment of a plant for the manufacture of thermostats and other precision devices. C. L. Brookshire, 19 East Sixth Street, is president.

The Centennial Cotton Gin Co., Fort Valley, Ga., manufacturer of cotton ginning machinery, has acquired a building for the establishment of a new plant. It will be equipped for an initial capacity of about two complete machines per day. K. Roscoe Cummus is secretary and treasurer.

The Vance Guano Works, Henderson, Ga., a subsidiary of the American Agricultural Chemical Co., 2 Rector Street, New York, is planning for the erection of a new plant for the manufacture of fertilizers, estimated to cost about \$500,000 with machinery.

The Austin Brothers Co., Atlanta, Ga., structural steel products, has acquired about 8 acres for the erection of a new plant for the fabrication of structural steel shapes and other specialties.

The Signal Mountain Portland Cement Co., Atlanta, Ga., has been incorporated with a capital of \$3,000,000 by Iowa interests to manufacture cement. R. C. Lubien, St. Ansgar, Iowa, is president, and Ralph A. Law, Mason City, Iowa, secretary. Plans for a new cement mill are reported to be under way.

O. C. Praeter & Son, Townville, N. C., are planning to rebuild their cotton ginning plant, recently destroyed by fire.

The Bureau of Yards and Docks, Navy Department, Washington, is planning for the erection of a new one-story machine shop at the Naval Operating Base, Hampton Roads, Va.

The Bedford Pulp & Paper Co., Richmond, Va., will commence the erection at once of its new electric power plant at Colemans Falls, Va., estimated to cost about \$45,000.

The Nustone Products Corporation, 505 West Twenty-third Street, Baltimore, has leased about 10,000 sq. ft. for the establishment of a new plant for the manufacture of laundry tubs and similar products. It recently acquired the Robins Peerless Granite Tub Co., Baltimore.

Considerable machinery for fuel oil handling, including pumping equipment, tanks, measuring apparatus, etc., will

be installed in the new plant to be constructed by the United States Shipping Board, Washington, on Craney Island, Hampton Roads, Va. It is estimated to cost close to \$1,000,000 complete.

New pumping machinery, boilers and auxiliary operating equipment, estimated to cost about \$100,000 will be installed by the Public Works Department, Norfolk, Va., at the local pumping station. Walter H. Taylor, 3rd, is city engineer and director of public works.

The Southern Power Co., Charlotte, N. C., is planning for the construction of a new electric generating plant on Mountain Island, estimated to cost about \$10,000,000 with machinery and transmission equipment.

The Thompson Machine Shop, Foundry & Garage, Burlington, N. C., recently organized, has plans under way for a new one-story machine works and foundry, 100 x 150 ft. A department of the plant will be equipped for the manufacture of automobile bodies. W. N. Thompson is president and J. G. King, general manager.

## Buffalo

BUFFALO, March 28.

Over \$2,000,000 will be expended for machinery and equipment for the new milling plant to be constructed by the Standard Milling Co., 49 Wall Street, New York, at the foot of Louisiana Street, Buffalo. The entire plant will represent an investment of about \$8,000,000. The electrical installation will require about 16,000 hp. The A. E. Baxter Engineering Co., Ellicott Square, Buffalo, is engineer.

The Magnus Steel Co., Depew, N. Y., has awarded contract to Harding & Crea, White Building, Buffalo, for its new two-story building, 40 x 120 ft., to cost about \$40,000.

The Taylor Buff Co., Syracuse, N. Y., has been organized by H. A. Taylor and T. F. Horrigan, Syracuse, to manufacture buffing wheels and similar products.

Smith & Caffrey, 2613 Lodi Street, Syracuse, N. Y., operating an iron foundry, have had plans prepared for the construction of a one-story addition, 45 x 88 ft., to be used for ornamental iron products, estimated to cost about \$30,000.

The Lisk Mfg. Co., Canandaigua, N. Y., has been incorporated with a capital of \$1,650,000 by P. A. Vay, T. E. Lannin and C. C. Keehn, Canandaigua, to manufacture metal and metal-enameled products.

The New York Engine Co., Watertown, N. Y., has placed its local plant on the market, consisting of about 18 acres, with several buildings, totaling about 128,100 sq. ft. in floor area.

## Detroit

DETROIT, March 28.

Machine-tool dealers in this district report a slight improvement in business conditions, although buying is far from brisk. The demand is still confined to single machines for replacements and a few other scattering orders of small proportions.

The Box-A-Lyne Co., Grand Rapids, Mich., has been organized with a capital of \$25,000 to manufacture linotype devices invented by William E. Borst and Clarence C. Gilleo. Mr. Gilleo is president.

The Crater Guarded Razor Co., Constantine, Mich., has been incorporated under the laws of Vermont for \$1,000,000. While its factory will be maintained at Constantine, the general offices will be at Columbus, Ohio. W. S. Crater is president, with headquarters in Columbus. O. E. Crater, Constantine, is general manager.

Contracts have been let for the construction of the new factory of the Federal Screw Works, Detroit.

The Utility Compressor Co., Detroit, Mich., is planning to move to Adrian, where it will erect a factory with a floor space of 20,000 sq. ft. The company was organized in 1913 and was originally engaged in the manufacture of air compressors and vacuum pumps for garage and laboratory purposes, but for some time has been devoting its attention to the manufacture of electrically controlled refrigerating equipment. It has a capital stock of \$500,000. E. R. Hasse is president; John W. Foster, vice-president; George J. Lehman, secretary, and T. Farmer Stephens, treasurer.

The Briggs Co., Lansing, Mich., operating a brick manufacturing plant at Grand Ledge, Mich., is planning for the erection of a new factory at Durand, Mich., for the manufacture of brick, tile and similar products.

The Safety Appliance & Machine Co., Detroit, has been incorporated with a capital of \$50,000 by Robert A. Shaw, Forest E. McKee and Edward Roberts, 2598 Montclair Avenue, to manufacture special punch press safety devices and other mechanical equipment.

The Progressive Engineering Co., Detroit, has been organized by James A. Purvis and Albert A. Kickhofel, 3520 Milwaukee Avenue, to manufacture special machinery and parts.

The Cooley Castings Co., Bay City, Mich., will enlarge its local plant, to include a new one-story machine shop. A list of equipment to be installed has been prepared.

The Dupree Mfg. Co., Detroit, has been incorporated with a capital of \$200,000 by Roy E. Cole, G. C. and Samuel F. Dupree, 2535 West Grand Boulevard, to manufacture automobile jacks and motor-car parts and equipment.

The Detroit Edison Co., Detroit, has preliminary plans under way for a branch power station at Marysville, Mich.

The Apeegee Mfg. Co., Detroit, has been incorporated with a capital of \$50,000 by David L. Wilson, John J. Bell and Henry M. Kohn, 111 Davison Street, to manufacture parts and metal specialties for automobiles.

Herman H. Hoexter and William A. Evans, 62 Adams Avenue, Detroit, have organized the A. J. Hoexter Co. to manufacture machinery and tools.

## Milwaukee

MILWAUKEE, March 28.

Continued improvement in inquiries for machine tools is noted in this market. While new business actually placed remains limited, it is apparent that the reductions in prices which have recently been effected by some of the principal milling machine makers here have aroused considerable interest. The fact that some shops, which have been operating at a relatively large capacity since last year, are being forced to curtail production is offsetting to some extent the betterment in volume of business in other industries after a period of slack operation. It is expected, however, that the average will continue to make gains, although the process will probably be slow.

The Creamery Package Mfg. Co., Chicago, has plans for enlargement of its branch works at Fort Atkinson, Wis., which manufactures dairy machinery and equipment principally. The main addition will be a new brass and aluminum foundry, details for which have not been issued. The work is in charge of Martin Tullgren & Sons, architects, 425 East Water Street, Milwaukee. Harry H. Curtis is general manager at Fort Atkinson.

The Milwaukee Public Sewerage Commission, City Hall, is asking sealed bids until April 22, at 2 p. m., for the complete equipment of a boiler plant, of the automatic stoker type, for the Jones Island sewage disposal project, estimated to cost \$300,000. John H. Fowles is secretary.

The Nordstrom Vulcanizer Co., Milwaukee, has been organized by Charles Nordstrom, 2706 St. Paul Avenue, to manufacture rubber vulcanizing units of the oil-burning type. A location is being sought in one of the smaller industrial communities in the neighborhood of Milwaukee. Marston & Lamboy, architects, 16 Mack Block, Milwaukee, are preparing plans for three U-shaped factory buildings, 60 x 100 ft., with sawtooth roof; a power house, 40 x 50 ft., and office building, 40 x 60 ft. No date has been set for taking bids.

The Board of Education, Whitehall, Wis., has engaged Oppenhamer & Obel, architects, Wausau, Wis., to design a new high school and vocational training institute, two stories, 75 x 157 ft., with basement, estimated to cost about \$125,000. Work is to start early in May. A. D. Peterson is clerk.

The Badger Die Casting Co. is the new style adopted by the Badger Bearing Co., 157-159 Buffalo Street, Milwaukee, to better express the nature of its principal business. It will continue to specialize in die-cast bearings for gas engines, tools, etc. George W. Tichel is president.

The Lauterbach Motor Co., Cedarburg, Wis., will build a one-story brick and steel garage and machine shop, 60 x 150 ft., and is inquiring for a small list of new and used equipment. It will cost about \$17,500 complete.

The Every Purpose Truck Body Co., LaCrosse, Wis., has been incorporated with a capital stock of \$40,000 to manufacture commercial car attachments, bodies and fittings for automobiles and motor trucks. The incorporators are F. J. Preeschl, J. L. Salzer and M. W. Preeschl. A factory will be equipped in leased quarters.

The Badger Lumber & Mfg. Co., Oshkosh, Wis., has plans for a two-story brick and concrete addition, 48 x 126 ft., and will install considerable equipment for manufacturing wood specialties.

The Board of Education, Kaukauna, Wis., has commissioned Parkinson & Dockendorff, architects, LaCrosse, Wis., to design a junior high and vocational training institute, to cost not more than \$175,000. Sketches will be ready about April 10. T. A. Towsley is secretary of the board.

The Milwaukee Board of Industrial Education, Seventh and Prairie streets, will soon ask for bids for the erection of the superstructure of the second unit of the Central Continuation School, estimated to cost \$1,750,000. It will be six stories, 142 x 268 ft., with a 38-ft. basement, and of reinforced concrete. Vocational training equipment will be purchased later. Fred H. French is secretary of the board.

The Peterson Flusher Co., Spokane, Wash., a \$100,000 corporation engaged in the manufacture of sink, toilet and sewer drain cleaning outfits, has acquired a plant at 276-278 First Avenue, Milwaukee, and will transfer its operation about April 1.

The Milwaukee Common Council has instructed the city engineering department, George F. Staal, city engineer, to prepare plans and specifications for the proposed new Riverside pumping station on the west bank of the Milwaukee River, estimated to cost \$2,500,000. Specifications of the pumping equipment will probably be available by May 1. Percy Braman is commissioner of public works.

The Oshkosh Motor Truck Co., Oshkosh, Wis., which recently completed its new works at a cost of \$250,000, is resuming normal production on April 1 to execute a contract calling for 1000 quadruple drive commercial cars and fire apparatus for delivery over a period of one year. The contract involves approximately \$4,000,000. Plans are being prepared for a one-story brick and steel addition, 50 x 200 ft., to be used for assembling, shipping, stock rooms, etc. W. A. Besserlich is vice-president and chief engineer.

The D. J. Murray Mfg. Co., Wausau, Wis., founder and machinist, manufacturing saw and planing mill, paper and pulp machinery and equipment, has been reorganized following the retirement of Donald J. Murray, president and general manager since 1881. His major interest has been acquired by a group of Wausau capital, including thirty of the oldest employees. The new officers are: President, William L. Edmonds; vice-president, John D. Ehrmann; secretary, Paul Wolfgram; treasurer, W. B. Heinemann. D. R. Bellinger, manager Carthage Machine Works, Carthage, N. Y., has been engaged as general manager and will take charge of operation about April 15. The new owners intend to enlarge the line and scope of production.

## Indianapolis

INDIANAPOLIS, March 28.

The White River Manganese Co., 567 Broadway, Gary, Ind., is planning for the development of manganese properties at Batesville, Ark., and will install hoisting and conveying apparatus, washing and concentrating machinery and auxiliary apparatus. The company recently increased its capital to \$500,000. William G. Rinehart is president and manager.

The Karges Wagon Works, Morgan Avenue, Evansville, Ind., is planning for the erection of a one-story addition, 60 x 250 ft., estimated to cost about \$35,000.

Fire, March 21, destroyed a portion of the plant of the Moorhead Oil Co., Hammond, Ind., with loss estimated at about \$200,000 with machinery. It will be rebuilt.

The Sunbeam Domestic Appliance Co., Evansville, Ind., has been incorporated with a capital of \$250,000 by A. F. Karges, C. H. Battin and S. L. Orr, Evansville, to manufacture mechanical appliances and devices.

The Western Oil Refining Co., 307 North Penn Street, Indianapolis, is planning for the erection of a new two-story works building on North New Jersey Street, 120 x 150 ft., to cost about \$75,000.

The General Electric Co., Schenectady, N. Y., is having plans prepared for a new plant on Broadway, Fort Wayne, Ind., for the Fort Wayne Electric Works. About 60 acres were recently acquired. Two structures will be erected to aggregate about 65,000 sq. ft. of floor area and estimated to cost about \$75,000.

The City Council, Kendallville, Ind., will take bids up to April 7 for its new one-story municipal electric power plant, estimated to cost about \$100,000 with machinery. Freulich & Emery, 403 Second National Bank Building, Toledo, Ohio, are engineers. S. E. Dickenson is city superintendent in charge.

The Nonspin Cam Differential Co., Hartford City, Ind., has been incorporated with \$50,000 to manufacture differentials for motor vehicles. The directors are C. D. W. F. and B. M. Dudley, C. R. Luzadder and H. C. Everett.

## The Pacific Coast

SEATTLE, March 21.

The educational campaign conducted by jobbers in this section, in combination with Eastern manufacturers, with models in the schools and colleges of the State, will bring a fairly good buying of machine tools by these institutions in providing for large expenditures to be used as soon as the

appropriations made by the Washington State legislature are available. Orders to be placed by high schools in the State are to be practically similar. Lathes, drill presses and portable iron and wood-working machines with individual motors are to be installed at once. The University of Washington, in this city, will install lathes and other tools, with a complement of acetylene welding tools. The five acetylene welding plants in Seattle are working at capacity. Wallace wood-working machines are also in good demand, one jobbing house taking orders for \$4,400 worth in less than 30 days. It is stated that expenditures during the next two years for tools for manual training will run into millions of dollars.

The Tropico Potteries, Inc., Glendale, Cal., has been organized to take over the plant and business of the Pacific Minerals & Chemical Co., Glendale, which will be enlarged and new machinery installed for the manufacture of tile products, vitrified sewer pipe, terra cotta, etc. It is proposed to install a new continuous tunnel kiln, pressing machinery, drying equipment and other apparatus. F. B. Ortmann, formerly connected with the Northwestern Terra Cotta Co., Chicago, will be vice-president and general manager.

The City Commission, Pasadena, Cal., is considering a bond issue of \$365,000 for an addition to the municipal electric generating plant and installation of new machinery. C. W. Koerner is general manager of the Electrical Bureau.

The Forderer Cornice Works, Sixteenth and Potrero streets, San Francisco, has arranged for extensions in operations, including the manufacture of hollow metal doors and trim, lockers, etc. A department of the works will be used for this branch of the business.

The Attacho Tractors Co., Long Beach, Cal., has been incorporated with a capital of \$200,000 by Ray C. Gurdy, M. E. Jackson and H. R. Davis, all of Long Beach, to manufacture motor-driven tractors and parts.

The Board of City Trustees, Red Bluff, Cal., has preliminary plans under way for the erection of a municipal electric power plant on Mill Creek, estimated to cost about \$170,000. W. F. Luning, city engineer, is in charge.

The Stop-Burglar Lock Co., Los Angeles, has been incorporated with a capital of \$500,000 by E. A. and Blair Hill, C. A. Nelson and P. M. Hill, Los Angeles, to manufacture special locks and locking devices. J. H. Miller, 1128 Black Building, represents the company.

The Pacific Spring Bed Co., 2326 Fourth Street, Berkeley, Cal., is taking bids on a general contract for a new two-story, reinforced-concrete building, 52 x 100 ft., on Fourth Street. James W. Plachek, 2014 Shattuck Avenue, is architect.

The H. W. Mfg. Co., Los Angeles, will change its name to the R. & W. Electrical Mfg. Co. to specialize in the manufacture of electrical machinery and equipment. A. E. Treat is secretary.

The Service Auto Works, Los Angeles, has filed notice of organization to operate a machine shop at 1948 South Los Angeles Street for repair work, parts manufacture, etc. R. B. Young and A. C. DeLang, 333 West Twentieth Street, head the company.

## The Central South

ST. LOUIS, March 28.

The Power Truck & Tractor Co., Detroit, has completed plans for the construction of its new plant on Goodfellow Avenue, St. Louis, and will soon call for bids. The works will consist of six one-story buildings, with main plant, 50 x 250 ft., and, with machinery, is estimated to cost close to \$1,000,000. The company is represented locally by the P. G. Craven Co., 1235 Syndicate Trust Building, which will handle all details. J. T. Craven, 904 Century Building, St. Louis, is engineer.

The Ash Grove Lime & Portland Cement Co., seventh floor, Grand Avenue Temple Building, Kansas City, Mo., has completed plans for a new one-story electric power plant at its cement mills, Chanute, Kan., 80 x 160 ft., to cost about \$100,000 with machinery.

D. L. Piggott, Twelfth and Prospect avenues, Kansas City, Mo., is having plans prepared by W. E. Harris, architect, 2110 North Fifth Street, Kansas City, Kan., for a one-story automobile service and repair works, 110 x 145 ft., to cost about \$42,000.

The Eagle Motor Truck Co., 6154 Bartmer Avenue, St. Louis, has acquired a site for the erection of a new plant, estimated to cost about \$50,000, to manufacture automobile trucks and parts. Preliminary plans are under way and it is expected to commence construction during the summer. J. P. Reis is head.

The Cleveland Machinery Co., Cleveland, Tenn., recently organized, will take over the business of the Cleveland Machinery & Supply Co. J. T. Huffine is president and Charles A. Homer, secretary and treasurer.

The Nashville Enameling Co., Forty-second Avenue and



Charlotte Pike, Nashville, Tenn., has been incorporated with a capital of \$50,000 by Valentine Taylor, John R. Burrows and Herman Spitz to manufacture enamelware products.

The Southwestern Steel Co., Sand Springs, Okla., is planning for the early operation of its new foundry at Springfield, Mo. The plant is now being completed. Equipment at the Sand Springs works will be removed to the new location.

Fire, March 19, destroyed a portion of the plant of the Sonken-Galamba Metal & Iron Co., Kansas City, Kan., with loss estimated at about \$200,000, including equipment.

The City Council, Osborne, Kan., is having plans prepared for a new one-story municipal electric power plant, 50 x 75 ft. E. T. Archer & Co., 609 New England Building, Kansas City, Mo., are engineers. S. P. Crampton is city clerk.

W. B. Storey, 80 East Jackson Boulevard, Chicago, is completing the erection of a new one-story machine shop, 102x125 ft., at Kansas City, Kan., to cost about \$50,000. Machinery will be installed at an early date.

The Memphis Gas & Electric Co., Memphis, Tenn., is planning for the construction of a new electric generating plant to cost about \$2,000,000 with machinery.

The Price Evans Foundry Co., Anderson Avenue, Chattanooga, Tenn., has completed foundation work for a new one-story building, 50 x 60 ft., to cost \$14,000.

The Standard Sanitary Mfg. Co., Sixth and Shipp streets, Louisville, manufacturer of sanitary ware, has awarded a contract to the Koerner Contracting Co., Louisville, for the erection of an addition to cost about \$75,000.

The Chandler Welding & Machine Co., Texarkana, Ark., will install equipment for the manufacture of refrigerating machinery.

The Ampco Metal Products Co., Springfield, Mo., 302 Woodruff Building, will erect two buildings, each 60 x 160 ft., for the manufacture of metal goods.

The Arkansas-Oklahoma Ice & Cold Storage Co., Russellville, Ark., will increase its ice-making capacity and is in the market for the machinery.

The Deasmond Gin Co., Deasmond, Ark., C. D. Gladden and others interested, is in the market for about \$20,000 worth of cotton ginning machinery.

E. H. Colgan, Little Rock, Ark., will erect a machine shop and purchase about \$15,000 worth of equipment.

Harris & Irby, Watonga, Okla., will rebuild their cotton gin, burned with an estimated loss of about \$125,000.

The Wood & Lane Co., 915 Olive Street, St. Louis, is in the market for a 22 x 36 mine standard hoisting engine and other machinery.

## The Gulf States

BIRMINGHAM, March 28.

The Williams Machine & Mfg. Co., Dallas, Tex., manufacturer of cotton machinery, is planning for the establishment of a new factory at Lufkin, Tex., and will remove to this location. W. O. Williams is manager.

Fire, March 19, destroyed the machine shops of the Shiels & Shiels Planing Mills, East Side Avenue, Dallas, Tex., with loss estimated at about \$30,000. The shops will be rebuilt.

The Daytona Sheet Metal Works, Daytona, Fla., has completed plans for a new machine shop, 32 x 40 ft., and will commence work at once. Elmer Blank and Harley Force head the company.

The United States Engineer's Office, United States Government, Mobile, Ala., will take bids until April 18 for the construction of a new coal and ore-handling plant on a local site estimated to cost about \$350,000.

The Fox Sharpener Co., Waco, Tex., recently organized, is arranging for the establishment of a factory for the manufacture of sharpeners for safety razor blades. W. N. Blanton heads the company.

The Crystal Springs Ice Co., Crystal Springs, Miss., G. W. Chambers and others interested, will equip a \$60,000 ice-making plant.

The Nelson Concrete Culvert Co., Pontiac, Ill., recently incorporated with a capital of \$100,000, is planning for the erection of factory at Hattiesburg, Miss., for the manufacture of reinforced-concrete culverts, etc. R. J. Orr and W. J. Butler, Pontiac, head the company.

The Gladiolus Oil Co., Electra, Tex., is planning to rebuild its power house, recently destroyed by fire.

The Alabama Brick & Tile Co., Scottsboro, Ala., is planning for the construction of a factory on the Tennessee River, near Decatur, Ala., for the manufacture of brick, tile and kindred products. W. B. Neher, Scottsboro, heads the company.

The Alabama Power Co., Birmingham, is perfecting plans for the construction of its proposed hydroelectric power plant addition at Lock No. 12 on the Coosa River. With ma-

chinery, it will cost about \$500,000. W. N. Walmsley is vice-president and general manager.

Bonds for \$60,000 have been approved for extensions and improvements in the municipal electric power plant at Fort Pierce, Fla., including the installation of new machinery. The City Council is in charge.

The Pierce Brothers Electric Supply Co., Tampa, Fla., has awarded a contract to McGucken & McGucken, Tampa, for a new building at 206-12 Franklin Street to cost about \$22,000.

The City Council, Tallahassee, Fla., is arranging a bond issue of \$200,000 for the construction of a new electric light and power plant. Plans will be prepared at an early date. J. G. Greer is city manager.

The city of Meridian, Miss., will equip a light and power plant at a cost of about \$600,000 under a bond issue.

John F. McKinney, Niagara Falls, N. Y., and Edward R. Mayer, Amarillo, Tex., plan to lay a natural gas pipe line from the Amarillo field to Canyon and Hereford, Tex., and to construct distributing systems in those cities.

The Breckenridge Ice & Cold Storage Co., Breckenridge, Tex., has been incorporated with a capital stock of \$60,000 by E. A. Johnson, W. J. Lowry and E. J. Byers.

The Mexican Aguila (Eagle) Petroleum Co., Tampico, Mexico, will double the capacity of the brick manufacturing plant, near Tampico, which it recently purchased from the Tampico Brick Co.

## Canada

TORONTO, March 28.

The demand for machine tools in this market is still much below the corresponding period of last year, and while dealers expect business to reach a more normal basis soon there is little to indicate that a better demand is near. The greater part of the buying is for single tools or lists of two or three. Inquiries are fairly numerous, and many recently received are now turning into orders. Prices are still holding at old levels, although a few dealers are shading quotations to book some of the more doubtful business.

The Service Motor Truck Co., Wabash, Ind., which secured a \$50,000 site on the London & Port Stanley Railway in London, Ont., some months ago, and which later canceled its building plans pending a settlement of business conditions, has notified the Chamber of Commerce that it will commence construction work in June. Three buildings, 110 x 300 ft. and a power house will be erected as the first group. This plant is intended to provide for Canadian business and export trade to the British possessions.

The plant of the Johnson Rubber Co., Creighton Avenue, Mount Dennis, Ont., was destroyed by fire with a loss of \$15,000. The damage to equipment will amount to upward of \$5,000.

The Temiskaming & Northern Ontario Railway, North Bay, Ont., has completed plans for remodeling the machine shop and will install new equipment.

The G. W. McFarlane Engineering Co., Ltd., Paris, Ont., is in the market for a second-hand water cinder mill.

Contracts will be awarded at an early date for a brass foundry for the Taylor & Arnold Engineering Co., 260 St. James Street, Montreal. Equipment will be purchased later.

E. W. Backus, International Falls, Minn., will start work in about a month on the erection of a pulp and paper plant at Kenora, Ont., to cost about \$1,000,000.

The Wigget Electric Co., Ltd., 71 Wellington Street, Sherbrooke, Que., wants prices on several electric motors.

The city of Galt, Ont., will spend \$25,000 on the purchase of a stone crusher. Joseph McCartney is clerk.

The town of Hanover, Ont., will purchase a stone-crushing machine. John Taylor is clerk.

G. C. Fowle, Windsor Hotel, Montreal, is receiving prices on a sand pump crusher, elevator screen frame, roller dryers, shaking or jarring screens, pulverizer, etc.

The city of Penticton, B. C., will spend \$30,000 on extensions to its electric light plant.

The Thermo Electric, Ltd., Brantford, Ont., has been incorporated with a capital stock of \$60,000 by James Harley, Edmund Sweet, Archibald M. Harley and others to manufacture electric machinery, apparatus, etc.

The Air-Driven Engine & Locomotive Co., Ltd., Sault Ste. Marie, Ont., has been incorporated with a capital stock of \$50,000 by Ivan Lychyj, Michail Pchynichny, Samuel H. Alleluja and others to secure the patent rights held by Ivan Lychyj for the manufacture of an engine-driven air compressor and to manufacture machinery, engines, etc.

Matson & Co., Ltd., Aurora, Ont., has been incorporated with a capital stock of \$40,000 by William H. Bushell, Reginald R. Matson, William G. Cole and others to manufacture electrical fixtures, machinery, motors, tools, etc.

# Current Metal Prices

On Small Lots, Delivered from Merchants' Stocks, New York City

The quotations given below are for small lots, as sold from stores in New York City by merchants carrying stocks.

As there are many consumers whose requirements are not sufficiently heavy to warrant their placing orders with manufacturers for shipment in carload lots from mills, these prices are given for their convenience.

On a number of articles the base price only is given, it being impossible to name every size.

The wholesale prices at which large lots are sold by manufacturers for direct shipment from mills are given in the market reports appearing in a preceding part of THE IRON AGE under the general heading of "Iron and Steel Markets" and "Metal Markets."

## Iron and Soft Steel Bars and Shapes

Bars:	Per Lb.
Refined bars, base price.....	3.58c.
Swedish bars, base price.....	15.00c.
Soft steel bars, base price.....	3.58c.
Hoops, base price.....	4.33c. to 4.53c.
Bands, base price.....	4.28c.
Beams and channels, angles and tees	
3 in. x ¼ in. and larger, base.....	3.68c.
Channels, angles and tees under 3 in. x	
¼ in., base.....	3.58c.

## Merchant Steel Per Lb.

Tire, 1½ x ½ in. and larger.....	3.58c.
(Smooth finish, 1 to 2½ x ¼ in. and larger)...	3.78c.
Toe calk, ½ x ¾ in. and larger.....	4.25c.
Cold-rolled strip, soft and quarter hard.....	10.00c. to 10.50c.
Open-hearth spring steel.....	4.70c. to 8.00c.
Shafting and Screw Stock:	
Rounds.....	5.50c.
Squares, flats and hex.....	6.00c.
Standard cast steel, base price.....	15.00c.
Best cast steel.....	20.00c.
Extra best cast steel.....	25.00c.

## Tank Plates—Steel

¼ in. and heavier.....	3.88c.
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## Sheets

### Blue Annealed Per Lb.

No. 10.....	4.00c. to 4.78c.
No. 12.....	4.05c. to 4.83c.
No. 14.....	4.10c. to 4.88c.
No. 16.....	4.20c. to 4.98c.

### Box Annealed—Black

	Soft Steel C.R., One Pass Per Lb.	Wood's Refined, Per Lb.
No. 18 to 20.....	5.05c. to 5.30c.	.....
Nos. 22 and 24.....	5.10c. to 5.35c.	6.05c.
No. 26.....	5.15c. to 5.40c.	6.15c.
No. 28.....	5.00c. to 5.50c.	6.25c.
No. 30.....	5.50c. to 5.75c.	.....

No. 28, 36 in. wide, 10c. higher.

### Galvanized Per Lb.

No. 14.....	5.00c. to 5.50c.
No. 16.....	5.25c. to 5.75c.
Nos. 18 and 20.....	5.40c. to 5.90c.
Nos. 22 and 24.....	5.55c. to 6.05c.
No. 26.....	5.70c. to 6.20c.
No. 27.....	5.85c. to 6.35c.
No. 28.....	6.00c. to 6.50c.
No. 30.....	6.50c. to 7.00c.

No. 28, 36 in. wide, 20c. higher.

## Welded Pipe

### Standard Steel

	Blk. Galv.	Wrought Iron	Blk. Galv.
½ in. Butt....	—40 —23	¾-1½ in. Butt....	—13 + 6
¾-3 in. Butt....	—44 —28	2 in. Lap.....	— 8 +10
3½-6 in. Lap....	—39 —24	2½-6 in. Lap....	—10 + 5
7-12 in. Lap....	—32 —15	7-12 in. Lap....	list +16

## Steel Wire

	Per Lb.
Bright basic.....	5.25c.
Annealed soft.....	5.25c.
Galvanized annealed.....	6.00c.
Coppered basic.....	5.75c.
Tinned soft Bessemer.....	6.75c.

\*Regular extras for lighter gages.

## Brass Sheet, Rod, Tube and Wire

### BASE PRICE

High brass sheet.....	18 c. to 21 c.
High brass wire.....	19¼ c. to 21¼ c.
Brass rod.....	17 c. to 20¼ c.
Brass tube, brazed.....	32 c. to 35¼ c.
Brass tube, seamless.....	21½ c. to 23½ c.
Copper tube, seamless.....	22½ c. to 24½ c.

## Copper Sheets

Sheet copper, hot rolled, 24 oz., 21½c. to 22c. per lb. base.

Cold rolled, 14 oz. and heavier, 2c. per lb. advance over hot rolled.

## Tin Plates

### Bright Tin

Grade	Grade	Coke—14x20	Primes	Wasters
"AAA"	"A"			
Charcoal	Charcoal	80 lb....	\$7.80	\$7.55
14x20	14x20	90 lb....	7.90	7.65
		100 lb....	8.00	7.75
IC..	\$12.00	IC....	8.15	7.90
IX..	13.75	IX....	9.15	8.90
IXX..	15.25	IXX....	10.15	9.90
IXXX..	16.50	IXXX....	11.15	10.90
IXXXX..	18.00	IXXXX....	12.15	11.90

## Terne Plates

8-lb. Coating 14 x 20

100 lb. ....	\$8.35
IC.....	8.50
IX.....	9.50
Fire door stock.....	11.50

## Tin

Straits pig.....	33c.
Bar.....	38c. to 40c.

## Copper

Lake ingot.....	15c.
Electrolytic.....	15c.
Casting.....	15c.

## Spelter and Sheet Zinc

Western spelter.....	6½c. to 7c.
Sheet zinc, No. 9 base, casks.....	12c. to 13c.

## Lead and Solder\*

American pig lead.....	5½c.
Bar lead.....	6 c. to 7 c.
Solder, ½ and ½ guaranteed.....	23c.
No. 1 solder.....	21½c.
Refined solder.....	17½c.

\*Prices of solder indicated by private brand vary according to composition.

## Babbitt Metal

Best grade, per lb.....	80c.
Commercial grade, per lb.....	40c.
Grade D, per lb.....	35c.

## Antimony

Asiatic.....	6½c. to 7c.
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## Aluminum

No. 1 aluminum (guaranteed over 99 per cent pure), in-ingots for remelting, per lb....	32c. to 35c.
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## Old Metals

The downward tendency of the market appears to have stopped, and prices are much firmer this week. Dealers' buying prices are nominally as follows:

	Cents Per Lb.
Copper, heavy and crucible.....	10.00
Copper, heavy and wire.....	9.00
Copper, light and bottoms.....	7.75
Brass, heavy.....	5.75
Brass, light.....	4.25
Heavy machine composition.....	9.25
No. 1 yellow brass turnings.....	4.75
No. 1 red brass or composition turnings.....	7.50
Lead, heavy.....	3.25
Lead, tea.....	2.25
Zinc.....	2.75

